PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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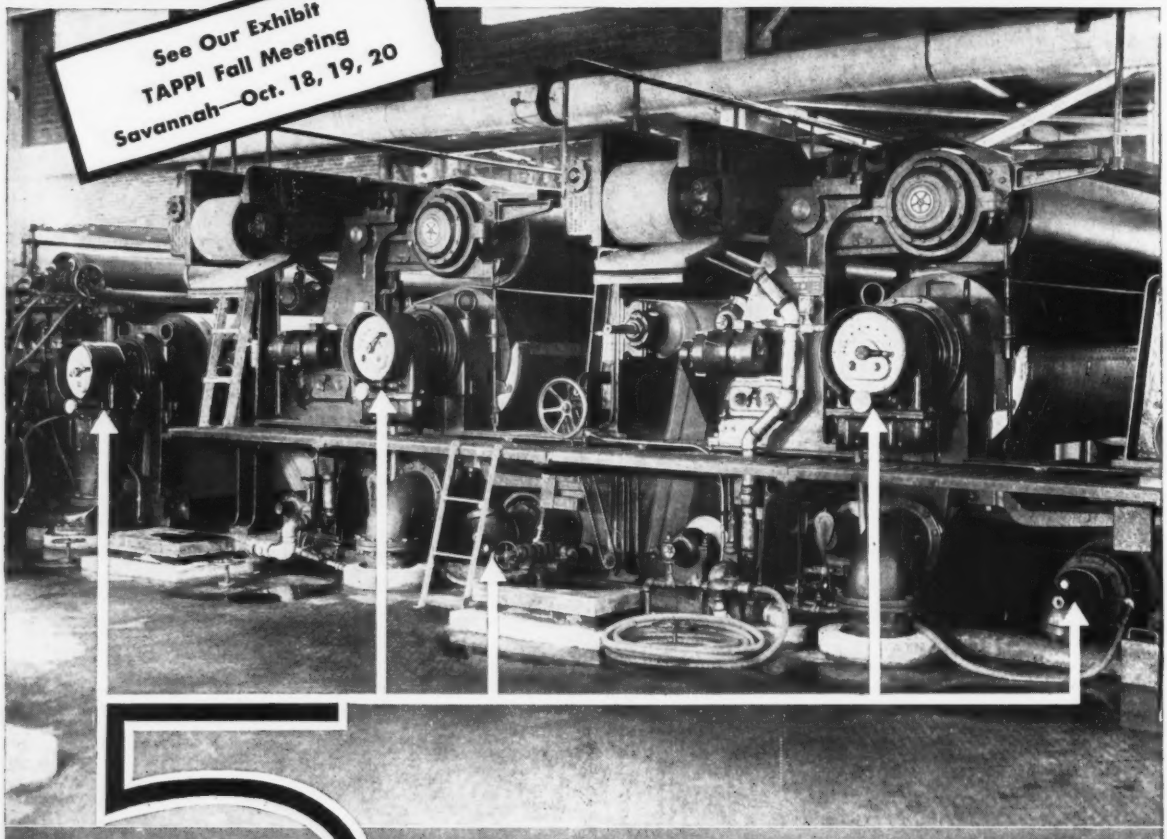

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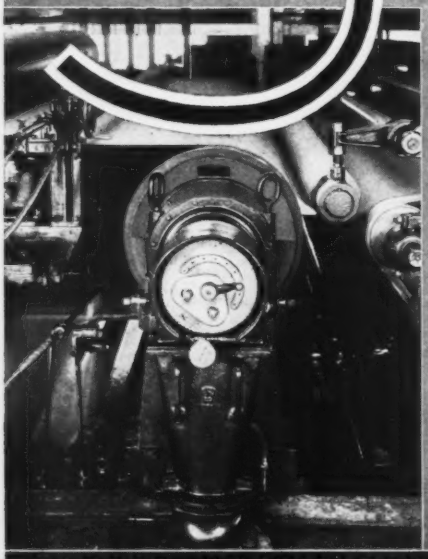

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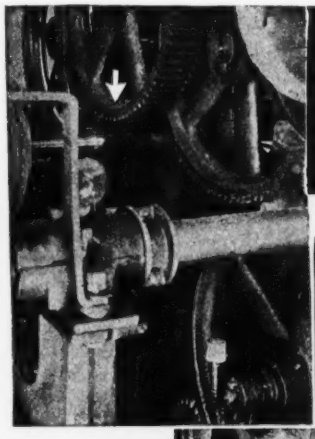

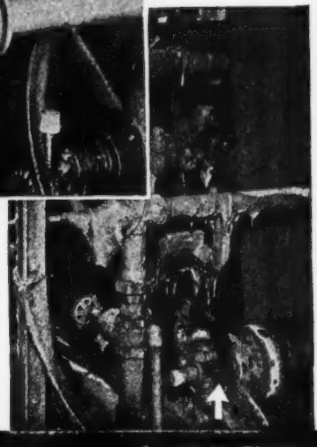

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PAPER TRADE JOURNAL

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SIXTY-SIXTH YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CV, No. 14 Thursday, September 30, 1937

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Census Reports 864 Fourdriniers in U. S.

This Compares With 865 In 1935 and 878 In 1934 — Cylinder Machines Were 669 In 1936, 662 In 1935 and 666 In 1934 — Total Machine Capacity, 14,458,090 Tons In 1936, 13,985,960 In 1935, and 13,888,310 In 1934

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 27, 1937. — Tables just available from the United States census for 1936 are presented herewith showing the number of paper-making machines in the United States, the pulpwood consumption in the United States and the wood pulp production in the United States for the years 1936, 1935 and 1934.

PAPER-MAKING MACHINES—TYPE, NUMBER, AND CAPACITY, BY KIND OF PAPER MADE: 1936, 1935, AND 1934 [1]

Kind	Total capacity per year of 310 days, tons (2,000 pounds)	Fourdrinier: Number	Fourdrinier: Capacity per 24 hours, tons (2,000 pounds)	Cylinder: Number	Cylinder: Capacity per 24 hours, tons (2,000 pounds)
Total:					
1936	14,458,090	864	25,122	669	21,517
1935	13,985,960	865	24,357	662	20,759
1934	13,888,310	878	23,737	666	21,064
Newsprint:					
1936	1,007,810	49	3,251	...	.....
1935	1,081,280	57	3,488	...	.....
1934	1,237,830	66	3,993	...	.....
Book paper:					
1936	1,837,680	202	5,922	1	6
1935	1,937,190	223	6,212	3	37
1934	1,790,250	216	5,696	4	79
Cover paper:					
1936	37,200	8	113	1	7
1935	51,460	15	160	2	6
1934	48,670	16	157	...	.....
Writing paper:					
1936	728,810	144	2,340	1	11
1935	712,070	139	2,260	4	37
1934	709,280	142	2,276	1	12
Wrapping paper:					
1936	2,180,850	201	6,625	35	410
1935	2,055,610	195	6,083	34	548
1934	2,010,970	189	6,002	39	485
Tissue paper:					
1936	640,770	114	1,673	73	394
1935	611,630	108	1,445	79	528
1934	529,790	110	1,285	82	424
Absorbent paper:					
1936	145,390	37	416	22	53
1935	172,360	38	472	17	84
1934	149,110	33	435	22	46
Building paper:					
1936	728,190	4	174	64	2,175
1935	777,790	5	291	60	2,218
1934	735,940	2	140	67	2,234
Other paper: [2]					
1936	639,530	72	1,922	16	141
1935	589,930	56	1,656	20	247
1934	719,510	79	2,093	13	228
Board:					
1936	6,511,860	33	2,686	456	18,320
1935	5,996,640	29	2,290	443	17,054
1934	5,956,960	25	1,660	438	17,556

[1] The figures shown in table 3 in the "Number" columns indicate the kind of paper and board made principally on the respective machines, but in cases where one or more machines of the same type are used for producing two or more kinds of paper or board, the items in the "Capacity per 24 hours" columns were distributed according to the several kinds of paper and board made.

[2] Including catalog, hanging, poster, news-tablet, lining, etc.

PULPWOOD CONSUMPTION—QUANTITY, BY PROCESS OF MANUFACTURE, FOR THE UNITED STATES: 1936, 1935, AND 1934

Process	1936: Cords	1936: Per cent of total [1]	1935: Cords	1935: Per cent of total [1]	1934: Cords	1934: Per cent of total [1]
Total	8,715,916	100.0	7,628,274	100.0	6,796,659	100.0
Mechanical	1,365,913	15.7	1,265,944	16.6	1,203,006	17.7
Sulphite	3,483,681	40.0	3,110,830	40.8	2,839,453	41.8
Sulphate	2,939,982	33.7	2,424,920	31.8	2,023,780	29.8
Soda	795,981	9.1	707,823	9.3	631,273	9.3
Semichemical	130,359	1.5	118,757	1.5	99,147	1.5

[1] Each percentage is correct to the nearest tenth, but the percentages in any column do not necessarily add to exactly 100.0.

WOOD-PULP PRODUCTION—QUANTITY, BY PROCESS OF MANUFACTURE, FOR THE UNITED STATES: 1936, 1935, AND 1934

Process	1936: Tons of 2,000 pounds	1936: Per cent of total [1]	1935: Tons of 2,000 pounds	1935: Per cent of total [1]	1934: Tons of 2,000 pounds	1934: Per cent of total [1]
Total	[2] 5,695,219	100.0	[3] 4,925,669	100.0	[4] 4,436,128	100.0
Mechanical	1,482,977	26.0	1,359,721	27.6	1,298,204	29.3
Sulphite	1,851,099	32.5	1,605,690	32.6	1,472,306	33.2
Sulphate	1,803,448	31.7	1,472,735	29.9	1,253,662	28.3
Soda and semi-chemical [5]	557,695	9.8	487,523	9.9	411,956	9.3

[1] See footnote 1 at top of column.

[2] Includes data for screenings, as follows: Mechanical, 7,357 tons; sulphite, 29,257 tons; and sulphate, 8,714 tons.

[3] Includes data for screenings, as follows: Mechanical, 3,902 tons; sulphite, 26,123 tons; sulphate, 4,986 tons; and soda, 2,361 tons.

[4] Includes data for screenings, as follows: Mechanical, 1,669 tons; sulphite, 26,262 tons; sulphate, 7,393 tons; and soda, 270 tons.

[5] Combined to avoid disclosing approximations of production by individual establishments.

Frank M. Sayford Co. Starts Dayton Plant

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 27, 1937—The Frank M. Sayford Company, Brooklyn, N. Y. this week is starting operations in a newly-installed plant for the manufacture of paper insulation and paper specialties in a building located on North Findlay street, Dayton, owned by the John F. Class estate, and which recently was vacated by the Joyce-Cridland Company, manufacturers of jacks, this firm having erected a large factory building nearby.

The Dayton plant is the third branch to be opened by the Brooklyn concern, the others being located in Erie, Pa. and in West Virginia.

Arthur Bramson will be in charge of operations, and he said he hoped to have everything in running order this week. For the present the firm will employ 100 men and women, it was announced.

The building acquired by lease is 100 x 200 feet and is of brick and concrete construction.

N.P.T.A. Holds Successful Chicago Meeting

Nearly Three Hundred Register at Fall Meeting of Association at Hotel Stevens — Cooperation Stated To Be Need For Good of Industry — Paper Divisions and Special Committees Meet — List of Exhibitors.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 27, 1937—With nearly three hundred actual registrants and many more interested visitors who failed to get their name on the dotted line, the National Paper Trade Association held one of its most successful meetings at the Hotel Stevens, Chicago, on September 21, 22 and 23. While the many committee and general meetings were exceptionally well attended and described as unusually productive, the feature of the meeting was the initial effort to regulate and encourage the use of exhibit space. Reports indicated that the fifty exhibitors were pleased with the arrangements and that the interest shown by prospective customers was especially satisfactory. The Association cooperated by providing a neat and useful directory of the exhibitors on the 5th and 6th floor of the hotel, each page carrying the name of the exhibitor, the product and the names of the official representatives.

Cooperation Needed in Industry

The convention itself was characterized by oft-repeated statements bearing out the tremendous need for united effort within the industry. More than one speaker characterized present day developments as indicative of the fact that individual "go it alone" policies were going to be decidedly hazardous undertakings during the next few years. The leading spokesmen for those voicing this trend of thought was President F. B. Tracy who stated that cooperation of merchants in sound functioning and creative ideas within the industry would result in a much improved consumer demand and understanding and a continued benefit to the entire industry itself. Mr. Tracy stated his belief that support of trade association endeavors was not only a duty but an obligation.

The General and Divisional meetings and Committee meetings were open to members only, coinciding with policies of the N.P.T.A. adopted last year. However, the attendants at these various meetings were optimistic over the obvious willingness of the industry to crystallize its market policy with respect to creation of demand and stabilization of general market conditions.

Prefaced by Wrapping Paper Division meetings of the Gummed Tape Committee and Wrapping Paper Merchandising Committee and Fine Paper Division sessions of the Book-Offset and Groundwood and Newsprint Committees, the Monday general meetings got under way in the afternoon with Mr. Tracy presiding. The guest speaker, J. C. Aspley, president of Dartnell Publications, discussed "New Challenges to Management" and stressed the need for paper merchants to prepare for the deflation "pay day." He urged the building of a reserve on solid foundations and further suggested that paper executives pay more attention to sales promotion, deploring the fact that so many salesmen were ungrounded in basic paper facts and paper uses.

The meeting of the Western Paper Merchants Association was held during the afternoon of September 20 and concluded the activities of the initial day.

On Tuesday, September 21, discussions were almost entirely given over to group and committee meetings of the two divisions. The Wrapping Paper Committee of the Wrapping Paper Division held the first meeting of the day with J. L. Stille, Kraft Paper Association, discussing "New Sulphate Production in the South." He stressed the relation of this production to the problems of the kraft paper distributor.

The Specialties Committee met later in the morning with E. O. Turnquist acting as chairman, while the Writing Paper Committee, P. W. Lesh, chairman, and the Envelope Committee, R. W. Fishburn, chairman, met at corresponding hours discussing these matters as related to the Fine Paper Division. The Bag Committee of the Wrapping Paper Division and the Wrapping Paper Governing Committee met on the afternoon of September 21 with the Bag Committee giving a great deal of attention to the new consumers' net price discount table on grocery bags. The Paper Bag Manufacturers Institute had charge of the presentation. Under the chairmanship of D. A. Hoadley, chairman, the Bristol, Blank, Board and Tag Committee discussed general market conditions during the afternoon with the Fine Paper Governing Committee holding its session later in the afternoon. The Fine and Wrapping Paper Division directorates held an evening meeting to close the second day of the program.

The Wrapping Paper Division Tissue Committee opened the Wednesday procedure under the chairmanship of R. M. Stone and gave a great deal of attention to a recently completed survey covering State laws relating to branding and marking of toilet paper. The Wrapping Paper Merchandising Forum, conducted under the direction of J. R. Halkyard, was a feature of the morning session.

The Fine Paper Division meeting held on the morning of September 22 was presided over by vice-president G. C. Cobean who, in his opening remarks, recounted the specific tasks to be formed by paper merchants in relation to demand, regulation, market conditions and other factors. Thomas Quinn Beesley, executive director of the National Council of Business Mail Users, was the speaker of the Fine Paper session. Mr. Beesley discussed the postal outlook for the paper industry in 1937, pointed out continued uses of direct mail, influences that would retard such usage and stressed several points wherein the paper industry could more closely cooperate with the direct mail users. Results of the mid-year survey were presented by O. F. Marquardt while reports of Commodity Committees took up a part of the session with the following committee chairmen reporting: Book and Offset, A. M. Miller; Groundwood and Newsprint, G. E. Carpenter; Writing Papers, P. W. Lesh; Bristol, Blank, Board and Tag, D. A. Hoadley and Envelope, R. W. Fishburn.

During the afternoon the Wrapping Paper Division held its key meeting with vice-president F. T. Jamison in charge. Following Mr. Jamison's opening remarks F. P. Vaughan of the Tissue Manufacturers Association, spoke on "As Manufacturers Look at Merchants' Problems" and gave a most interesting and constructively critical analysis of merchandising short comings, how they reacted on the manufacturer and how cooperative endeavor could be helpful in solving a great many present day problems. The Twine Committee, J. F. Blackman; Merchandising, W. K. Bunting; Specialties, E. O. Turnquist; Survey, C. E. Roach; Gummed Tape, E. H. Kniep; Tissue and Allied Products, R. M. Stone; Bag, E. W. Wesselmann and Wrapping Paper, R. W. Miller followed with brief reports.

Addresses on Last Day

Thursday, the final day, was known as "Exhibitors Day" and a special effort was made to attract all convention visitors to the exhibits. The day also featured the semi-annual meeting of the National Paper Trade Association, with President Tracy presiding. The address "Where Industry and Education Meet," given by Westbrook Steele, director of the Institute of Paper Chemistry, was one of the high lights of the three day meeting. Mr. Steele gave some practical examples of the close tie-up between industry and its educational program; pointing out the beneficial effects of trained minds in a further development of the paper industry and urged a closer inspection of the work of the Institute. The reports of the survey Committee, C. E. Roach; Traffic, R. W. Campbell and the address given by J. K. Javits, counsel for the Association concluded the meeting.

During the afternoon more than 200 convention registrants and Chicago paper executives availed themselves of the opportunity to participate in the annual golf outing sponsored by the mid-west division of the Salesmen's Association of the Paper Industry.

List of Exhibitors

Exhibitors at the fall meeting were: American Paper Goods Company, American Paper Merchant, A. P. W. Paper Company, Associated Gummed Taped Industries, Bateson & Company, Bay West Paper Company, Boothby Fibre Can Company, Brower Paper Company, Brown-Bridge Mills, Inc., Brown Company, Central Paper Company, Menasha, Central Paper Company, Muskegon, Continental Bag Specialties Corporation, Crystal Tissue Company, Detroit, Sulphite Pulp and Paper Company, Diana Manufacturing Company, Dixie-Vortex Company, Fox Paper Company, Frank J. Hayman, Inc., Hoberg Paper Mills, Inc., Hooven & Allison Company, A. C. Hummel Company, January & Wood Company, Kalamazoo Vegetable Parchment Company, Kirch-Trumball Corporation, Kleen Products Company, Lily-Tulip Cup Corporation, Lincoln Bag Company, Loroco Industries, A. W. Mendenhall Company, Midland Products, Inc., Minerva Wax Paper Company, Mono Service Company, National Soda Straw Company, Nation Wide Papers, Inc., Nekoosa-Edwards Paper Company, Oneida Paper Products, Inc., Orchard Paper Company, Paperlynen Company, Racquette River Paper Company, Sealright Company, Inc., O. O. Sheline, Sherman Paper Products Company, Stevens & Thompson Paper Company, Superior-Lawrence Bag Division of the Sorg Paper Company, C. E. Twombly Company, White-Washburne Company, Inc., and Wolf Brothers.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 29, 1937.—The Government Printing Office has received the following bids for 5,900 pounds (25,000 sheets) of H. F. sulphite manila tag board; Reese & Reese, Inc., 8 cents per pound; Whitaker Paper Company, 7.84 cents; and R. P. Andrews Paper Company, 8 cents.

For 1,100 sheets of green gummed paper; Mathers-Lamm Paper Company, $12.10; Whitaker Paper Company, $14.70 less 2 per cent; Walker, Goulard, Plehn Company, $16.00 less 2 per cent; Reese & Reese, Inc., $14.50; Virginia Paper Company, $13.20; and R. P. Andrews Paper Company, $14.40.

For 36,000 pounds of No. 2 kraft wrapping paper in 48 inch and 36 inch rolls; Walker, Goulard, Plehn Company, 4.5 cents; Charles W. Beers & Company, 4.5 cents; Mathers-Lamm Paper Company, 4.75 cents; Old Dominion Paper Company, 4.41 cents; Barton, Duer & Koch Paper Company, 4.185 cents; R. P. Andrews Paper Company, 4.41 cents; Reese & Reese, Inc., 4.14 cents; Whitaker Paper Company, 4.41 cents.

For 6,250 pounds (50,000 sheets) of 50 per cent rag, blue antique cover paper; Reese & Reese, Inc., 16.32 cents; Virginia Paper Company, 12.25 cents; Walker, Goulard, Plehn Company, 12.36 cents; Mathers-Lamm Paper Company, 12.55 cents; Barton, Duer & Koch Paper Company, 12.2 cents; Stanford Paper Company, 12.2 cents; and R. P. Andrews Paper Company, 11.97 cents.

For 15,000 pounds (21,000 sheets) of marble grained lined board; Mathers-Lamm Paper Company, 4.53 cents.

For 2,000 sheets of brown cloth lined cover paper; Reese & Reese, Inc., $129.72 per M sheets and $129.36; Whitaker Paper Company, $129.72; R. P. Andrews Paper Company, $134.00; Barton, Duer & Koch Paper Company, $132.80; Walker, Goulard, Plehn Company, $130.00; less 2 per cent; Virginia Paper Company, $131.12; and Mathers-Lamm Paper Company, $130.25 and $144.50 and $133.32.

Reach Agreements With Unions

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., September 29, 1937—Industrial peace in the plants of the paper converters in Holyoke seems to have been secured the past week when agreements were reached with the labor unions in the Hazen paper company concern, the Marvellum Company and the American Tissue Mills Inc.

In a general way the agreements are not wholly unlike those with the paper manufacturing concerns here. The 150 employees of the Marvellum and Hazen companies go on to a 44 hour week, secure wage advances of from five to 10 per cent and agreement to the preferential union clause. Organizers Brooks and Sullivan appeared for the unions who are affiliated with the International Brotherhood of Paper and Sulphite Workers.

The 200 workers in the American Tissue Mills Inc., are to have a 40 hour week but no increase in pay as an increase had been granted only a few months ago. R. W. Jubinville of the International Brotherhood of Pulp, Sulphite and Paper Workers represented the union men and women involved.

Higher Newsprint Likely As Costs Go Up

Increase In Publisher's Stocks Held Move to Offset Expected Price Rise of $7.50 Per Ton — Newsprint Mills Plan to Increase Production for Balance of Year — Canadian Exports Drop In August — Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 27, 1937—After being for over a year prime favorites of the speculative element in the stock market, pulp and paper issues in recent weeks have been subject to a precipitate decline in market values. This decline has brought with it rumors that early prospects are less rosy than they appeared; that the recent large increase in publishers' stocks constitutes a threat to the price structure in the newsprint field; and that the price of $50 a ton for newsprint on contracts for the first half of 1938 may not be imposed.

The matter is the subject of considerable discussion in the press here, and newsprint authorities are quoted to the effect that there have been no developments in the industry which would indicate any early check to the steady improvement in marketing conditions. That there has been much forward buying by publishers is admitted, but this is taken as nothing more than a desire to offset as much as possible the anticipated rise of $7.50 a ton set for the initial half of the year. Not only is this increase regarded as certain, but it is pointed out that, in the event of continued rise in costs, another price increase on contracts for the second half of the year is a likely development.

Newsprint Production Increasing

Productive capacity in the newsprint field has been substantially increased during the present year, with further increases planned for the balance of 1937. These increases have not involved the establishment of any new mills, but have been made possible by the speeding up of existing machines, resumption of production from idle machines and the re-opening of shut-down plants. The only real addition to the mill capacity of the newsprint industry of Canada foreshadowed for the early future, is the new mill of the Ontario Paper Company at Comeau Bay, Quebec. Construction of this mill has now advanced so far ahead of schedule that, according to A. A. Schmon, president and general manager, it will probably be in operation in March next, three months ahead of the date originally set. When completed the mill will produce 350 tons of newsprint per day, and its entire output will go to The Daily News, New York, which, together with the Chicago Tribune, owns the Ontario Paper Company. It is not anticipated here that the operations of the mill will affect the general newsprint situation in Canada, since it will not operate on the open market and since its output is expected to replace newsprint hitherto obtained in Newfoundland and the United States.

Newsprint Exports Decline in August

Although newsprint exports in August were 17 per cent above those in August, 1936, they were lower than in July, according to figures just released by the Dominion Bureau of Statistics. The total for August was 5,662,569 cwt., valued at $10,662,990, as compared with 6,103,263 cwt., valued at $11,234,434 in July. The cumulative total for the five months of the present fiscal year was 28,849,071 cwt., valued at $53,249,647, as compared with 24,527,936 cwt., valued at $42,313,550 for the corresponding period last year.

Leading buyer was the United States which took $8,781,000 worth. Japan bought $377,000, Australia $364,000 and the United Kingdom $260,000.

August pulpwood exports totalled $1,912,000 compared with $1,749,000 in July and $1,107,000 in August, 1936. The cumulative five months' total was $5,830,000 against $3,937,000.

Indianapolis Demand Less Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 27, 1937—A return to hot weather during the last week caused a slight recession in demand for many paper items. Most of the wholesale trade a couple of weeks ago thought the fall season, in view of considerably more activity, had begun in earnest, but this was not to be. Even with hot weather, however, the calendar can not be fooled and inquiries are increasing in volume, pointing to a resumption of activity once cool weather returns.

Paper cups, towels, plates, tissues all continued in good demand. Retailers had permitted these stocks to decline and the return of summer weather caused them to reenter the market last week to fill immediate demands. Prices are firm.

Books and cover demand was only fair last week. The first rush for supplies incident to the opening of schools apparently has been satisfied and the trade in school papers has settled into the usual routine. Inquiries are being received, however, from several printers concerning paper for catalogue work to be printed later in the season but before the first of the year. More of this work is in prospect this year than last.

A fair demand was seen last week for paper boxes and cartons. Local manufacturers of boxes say the season has been a trifle delayed, but due to depletion in warehouse stocks, production is being stepped up gradually. Building paper and roofing showed a trifle more life last week. Dealers have comparatively low stocks and the prospect for fall building in this entire area is good.

The paper stock market shows no change. Most of the demand is for better grades, both in paper and rags, with mill demand steady and prices at previously quoted levels.

E. S. French To Be Oxford Director

Edward S. French, president of the Boston & Maine Railroad, has been elected a director of the Oxford Paper Company, Rumford, Maine, succeeding William T. Cobb, deceased.

Rothermere Optimistic of Canada's Future

Financial Head of Northcliffe Newspaper Chain Says Canada Must Have Own Limits and Plants—Interlake Tissue Mills Maintain Good Production — Cornerbrook Mill In Newfoundland at Capacity for the Year.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 27, 1937—Lord Rothermere, who was in Toronto last week, denied that there was a word of truth in the report that he was about to buy the Montreal Gazette. Such reports have been current ever since he arrived at Quebec on his way to Toronto to study the pulp and paper situation in Canada and especially to examine the state of affairs as it now exists with regard to Abitibi Power & Paper Co. Canadian investors may find it difficult to understand why Lord Rothermere takes such an interest in pulp and paper companies in Canada. He is generally regarded by those who know England best as the financial genius whose foresight in financial matters and on business trends permitted the marvellous growth from nothing, of the Northcliffe newspapers and fortunes, to such uninterrupted success.

"We must have our own limits and plants," he said in Toronto and no one has given more thought and study to the various elements affecting the world position of newsprint than Lord Rothermere. He has given special attention to every demand on the wood resources of the world from the rayon, celanese and other fabric industries, to the immense development of kraft plants in the United States, and the increasing uses to which cellulose is put.

Speaking optimistically of Canada's future, Lord Rothermere declared that this was a cellulose age. "I would not be surprised some day to see even rails made of cellulose because so many wonderful things have been done with it already. Articles made from it have shown the strength of steel and the country which has large resources of wood can therefore hope to do well. Canada should eventually displace Sweden as the country of greatest wealth per capita. I do not think there need be any fear of Southern pine displacing the Canadian pulp for newsprint. There is no southern tree which can give as good newsprint as can those from the Northern woods."

It is easy to agree with Lord Rothermere that his outspoken ideas as to what the price of newsprint will be are well based. It is pointed out, that he has been accustomed for so long to think decades ahead in arranging for needs of his newspapers that blanket the British Isles, that he can talk of what is going to happen in three or four years in almost the same way that most of us talk of what will happen tomorrow or next week. But he adds one qualifying clause to all his talks about what will happen in the future: "If there is no war or other major disaster." Because if that comes, he says, "all calculations as to price or quantities or as to the future will fail. The result will be incalculable."

Interlake Tissue Doing Well

Interlake Tissue Mills, manufacturers of paper specialties such as napkins, towels, decorative crepes and similar light weight papers, is reported to be doing a good volume of business. The demand for the company's products varies little from year to year, with the result that Interlake Mills have been able to maintain operations on an even keel at its Merritton, Ont., plant, while profits have been consistently steady. The financing of Interlake was carried out privately. George Carruthers is the president and general manager, with S. F. Duncan as vice-president.

Newfoundland Mill at Capacity

Word from Newfoundland is to the effect that operations at the Cornerbrook plant of International Power and Paper Co., Newfoundland, have been at capacity throughout the past year. While no interim report has been issued by the company on current operations, it is generally understood that earnings are on a better basis than in 1936, partly due to increased production, but principally to the higher selling price for paper. Last year the company reported net sales of $7.7 millions, an increase of $1 million over the year before. Higher expenses, notable for wages, more than offset this gain, and the drop in funded debt charges, with the result that there was a net loss on the year's operations of $364,179. On the other hand this was a somewhat better showing than in 1935, when the net loss, after depreciation and interest, amounted to $442,222. There is a possibility that before long the company will take steps to increase the capacity of the Cornerbrook plant. For some time I. P. of Newfoundland has been flirting with the idea of installing one or perhaps two, additional machines. The matter has been under consideration, and it is understood that there is no obstacle, as far as power supply and wood are concerned, to increasing capacity.

Another interesting development in connection with the company's operations has to do with the shipment of newsprint. In years past the company followed the practice of building up supplies during the winter months, when water-borne shipments are not possible. Recently the company made arrangements for establishing warehouse facilities in St. John, permitting all-year-around shipments. This has made for more effective plant operation.

Joins Dexter Sulphite Pulp & Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., September 27, 1937—Announcement is made here of the appointment of Floyd Donaldson to the position as assistant secretary of the Dexter Sulphite Pulp and Paper Company. He has been granted a leave of absence from his duties as an official of the Northern New York Trust Company, of Watertown, and will take over his new duties on October 1. Harold B. Evans, secretary and assistant treasurer of the paper company, will continue to serve in that capacity. An official said that the new position had been created because of the increased business of the concern. Mr. Donaldson entered the employ of the banking concern in 1920 and was made assistant secretary in 1932.

Printing Craft Visit Hamilton Paper Mill

Members and Friends of Philadelphia Printing House Craftsmen Guests of Hamilton & Son to Observe Paper Manufacture — Plant Founded in 1857, Has Recently Installed Many New Units—Golfers in Tournament.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 27, 1937—On Saturday, September 18th, one hundred and fifty members and friends of the Philadelphia Club of Printing House Craftsmen were guests of W. C. Hamilton & Son, to see paper in the making.

The order and dispatch with which this large delegation was conducted through the mill under guidance of H. H. Hanson, president of W. C. Hamilton & Son, Lane Taylor, secretary-treasurer, Joseph H. Dunton, sales manager, and Edward J. MacCorkendale, sales promotion representative, together with several of the mill executives, was convincing proof that they were well organized for the occasion.

The Craftsmen were keenly interested in the many new units of equipment recently installed. Within the last eighteen months, W. C. Hamilton & Son has installed a great many new units of equipment, which is in keeping with the company's policy of maintaining a mill equipped with the most modern machinery, in order to produce papers of the highest quality.

Among the many new installations were four Jones semi-high speed beaters with a capacity of two thousand pounds each, a bank of four centrifiners and 2 Bird rotary screens. The mill also has a new rag room, equipped with tile lined washers; and a new finishing room—a feature of which is the latest type seventy-four inch Seybold automatic trimmer, especially designed for cutting small sizes with absolute accuracy.

After touring the paper mill the visiting Craftsmen were guests at a luncheon provided by W. C. Hamilton and Sons at the Colonial Inn, Spring Mill, Pa. Mr. Hanson delivered an address of welcome to the Craftsmen and spoke of the historical background of the mill which started operating back in 1857.

The Philadelphia Club of Printing House Craftsmen is an organization with a view of developing a cooperative spirit, friendship and mutual assistance among the executive representatives of the printing industry, hence their motto, "Share Your Knowledge." Regular monthly meetings are held at the Poor Richard Club, the second Thursday of each month. The officers of the Club are John A. Axner, president; William Quinn, vice-president; V. Winfield Challenger, secretary and Harry A. Wagner, treasurer

GOLFERS OF PAPER INDUSTRY MEET

With a representative gathering of executives and salesmen of leading paper houses in this area, and clear skies overhead, the third of the fourth golf tournaments, which have been scheduled by The Philadelphia Paper & Cordage Assn., headed by E. L. Richards, Buffalo Envelope Company, Jack Shinners of Acme Specialty Company and Harry S. Platt, Denny Tag Company, was held at Roxborough Country Club on September 23.

Aside from being an exceptionally interesting occasion, there were some surprises in the play. G. W. Hoffner of Simon Walter, Inc., had one of his very good days, finishing up with a score of 81 to gain the lead in the race for first prize. Doris Lewis, executive secretary of Paper Trade Assn. of Philadelphia, furnished the real surprise of the day. Mrs. Lewis finished with a net score of 74 under men's par, but owing to the fact that she did not take advantage of women's par, unfortunately could not qualify for the prize.

The aftermath of the struggle for golfing fame was a tie for the low net prize, a handsome electric clock, presented by Harry S. Platt, of Denny Tag Company. The tie was the result of two scores of 73 net which were turned in by Frank Krueger, a guest, and Frederick I. Brower of the Atlantic Gummed Paper Corporation, makers of "On-to-Sta" gummed cloth and paper tapes.

The golfing committee ruled that one hole be played to decide the winner of the clock and the 9th hole was selected. This is a one-shot affair over a pond. Mr. Krueger had the honor and dropped his tee shot just over the green beyond the trap. According to Brower's story, the hole appeared to be the 19th. He lifted his head dropped his shoulder, shut his eyes and swung. By some miracle, the ball sailed into the late afternoon sun and dropped 15 feet from the pin. Krueger then had the misfortune to put his second into the trap and his third overran the hole. And then another miracle happened—Brower holed the putt for a birdie 2—and the clock.

Among those who teed off were Doris E. Lewis, Sam Shyrock, Shyrock Paper Company; George K. Hooper, Hooper Paper & Twine Company; Lee Johnson, D. L. Ward Paper Company; J. Howarth, Howarth Paper Company; J. H. Miller, H. J. Fleming, W. H. Van Aken, J. R. Kole, of Garrett-Buchanan Company; S. C. Brower, J. L. N. Smythe Paper Company; H. Satterthwaite, Satterthwaite-Cobough; Otto Renner, Renner Advertising Company; Max Dee, Dee Paper Company; Jack Shinners, Acme Specialty Company; G. W. Hoffner, Simon Walter, Inc.; E. L. Richards, Buffalo Envelope Company; A. P. Wilson, R. D. Linderman, F. Lott, Batchelder Company; J. Linton, L. J. Guischand, M. Belz, Frederick I. Brower, Atlantic Gummed Tape Company; F. Krueger; C. A. Slater; E. W. Steedle; T. B. Brinker; L. H. Ogden; D. A. Wickersham; G. S. Smith and J. Coy.

The prizes included an order for a Stetson hat, donated by Garrett-Buchanan Co., an electric toaster and hostess tray, donated by Hooper Paper & Twine Co.; an electric alarm clock, donated by Harry Platt of Denny Tag Co., golf balls and a cash prize, donated by president E. K. Lay.

At 6:30 o'clock, all enjoyed a hearty dinner, during which George K. Hooper, immediate past president of the Association expressed regrets at the absence of president E. K. Lay, James Andrews, vice-president and Arthur Sherrill, who on account of illness were confined to their homes.

Swedish Pulp Market Active

Throughout the second quarter of the year the Swedish pulp market was unusually active, production and exports rising to new high figures, according to a report to the Department of Commerce. Practically the whole of the 1937 production was sold as well as an unusually large proportion of the 1938 production. Some 1939 contracts have been made chiefly in sulphate pulp, but it is hardly to be expected that 1939 business will be transacted in appreciable amounts for the present inasmuch as there is an obvious reluctance on the part of both buyers and sellers to entering contracts so far in advance. The tendency earlier reported toward a real improvement in the market for mechanical pulp continued during the second quarter. The strength of the demand leads to the conclusion that there is an actual scarcity of wet mechanical pulp and prices have advanced appreciably during the period.

Exports of Swedish sulphite pulp for the first half of 1937 were about 19 percent above those for the corresponding period of last year. Exports of bleached sulphite reached a total of 175,020 metric tons as against 141,580 tons for the corresponding period in 1936. Exports of unbleached sulphite during the same period totalled 384,015 metric tons, an increase of 53,785 tons over the first half of 1936. No significant shift in markets was reported, principal buyers remaining the same.

Shartle Bros. Open New Plant Addition

Completion of their latest plant addition has been recently announced by the Shartle Brothers Machine Company of Middletown, Ohio. The new structure adds approximately 17,000 square feet to the erection floor, making a total well over 125,000 square feet.

The addition is of steel, concrete, and brick construction and houses two traveling cranes of 50 foot length and 20 ton capacity. According to plans it will be used for general erection purposes and thus will reduce the crowded condition caused by recent increases in business.

The new addition is the second to be built within the last year. In the spring, Shartle Brothers built a modern welding plant 80 feet by 160 feet fully equipped with the latest metal working machinery.

New England TAPPI Discusses Color

The New England Section of the Technical Association of the Pulp and Paper Industry held its first fall meeting at the Mt. Tom Golf Club, Holyoke, Mass., Saturday, September 25. John B. Calkin presided as chairman.

A golf tournament was held in the afternoon with prizes awarded to L. A. Thompson, John P. Kennedy, F. H. Schneider, A. J. Decouagne, A. F. Cosby, P. S. Sinclair and Ralph Carter.

In the evening R. T. Emerson of the Dennison Manufacturing Company, Framingham, Mass., presented a paper entitled "Color and Its Measurement."

Colors for Paper

A circular, No. 286-D, showing red and green colors for paper has been issued by the Geigy Company, Inc., of 89 Barclay Street, New York. The colors are adaptable to wrapping tissue, kraft wrappers and miscellaneous types of paper.

Wall Boards and Insulating Materials

Wall Boards and Insulating Materials is the title of a new 31-page mimeographed bulletin just released by the Forests Products Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Among the industries which have enjoyed a phenomenal growth during the past 25 years is the production of wall boards and insulating boards and materials of various sorts. Originally designed, as the name implies, as a lining for walls and partitions, wall boards are now extensively employed for a wide variety of purposes. Outside of their use as wall panelling in homes, offices, cabins, and camps, they are employed by automobile manufacturers as a lining for cars, by the motion picture industry in the construction of temporary "sets," and at fairs and expositions in the construction of display booths and signs. Insulating materials are not only being utilized to an increased extent as a protection against heat and cold in the construction field, but to deaden and transmission of sound in walls and floors and to correct acoustics in auditoriums, motion picture studios and radio broadcasting studios.

This bulletin has been published with a view to answering numerous requests for information in regard to production methods, basic raw materials, for statistical data, production and consumption trends, new uses developed, and a host of other questions received from manufacturers and others interested in these products. In addition to brief discussions on the foregoing subjects, the bulletin contains tables of thermal conductivity of the various types now on the market, domestic production, exports, a list of suggested uses, a partial list of manufacturers of trade marked products, and a bibliography.

This release represents the third revision of this bulletin and embodies the most recent information which the Forest Products Division has on the subject. It may be secured, free of charge, upon request direct to the Forest Products Division, or through the District and Cooperative Offices of the Bureau of Foreign and Domestic Commerce.

Books and Documents

Grafton & Company, London, England, have just published a 21 page book by Julius Grant, entitled Books and Documents (Dating, Permanence and Preservation).

Part I deals with the subject of dating in which is discussed the history of the origin and development of paper from the point of view of dating characteristics, and is discussed tests which indicate the presence or absence of these characteristics. A special chapter is devoted to the use of fluorescence of ultraviolet light as a testing medium.

Part II deals exhaustively with the durability, permanence and preservation of books and documents. The manufacture and testing of paper is discussed from this point of view. The question of storage conditions and specifications for permanent materials are also dealt with fully.

This book may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York, at $2.75.

Financial News of Pulp and Paper Industry

Business Men Charge Boston Bondholders' Protective Committee of Brown Reorganization Plan With Undue Delay — Sutherland's Earnings Up—Paper Mill Assessments Are Reduced — Great Northern Expands.

New York Stock Exchange

High, Low and Last for the Week Ending September 29, 1937

	High	Low	Last
A. P. W.	5	4⅛	4⅛
Armstrong Cork Co.	50¼	45¾	49¾
Celotex Corp.	31½	30	30½
Celotex Corp., pf.	63	62	62
Certain-Teed Products Corp.	9	7½	8¾
Certain-Teed Products Corp., pf.	37	30	35½
Champion Paper & Fibre Co.	48	42	46¼
Champion Paper & Fibre Co., pf.	108	107½	107⅝
Congoleum-Nairn Co.	31¾	27	29½
Container Corp. of Amer.	21⅞	19¾	21¼
Continental-Diamond Fibre Co.	13⅛	10⅞	13
Crown Zellerbach Co.	17⅛	15⅛	16½
Crown Zellerbach Co., cum. pf.	86⅜	86	86⅜
Flintkote Co.	20¾	18	19¼
Robert Gair	8¾	7	7⅞
Robert Gair, pf.	30	29	29
International Paper & Power	18½	14½	16⅝
International Paper & Power, pf.	67¾	58½	64⅛
Johns-Manville Corp.	105	95	103⅛
Johns-Manville Corp., pf.	125	123	125
Kimberly-Clark Corp.	32	28½	32
MacAndrews & Forbes	30	29	29
MacAndrews & Forbes, pf.	127½	127½	127½
Masonite Corp.	37¼	35⅛	29
Mead Corp.	22¾	20	20¾
Mead Corp., pf.	75	73	75
Paraffine Companies, Inc.	56¼	50	53
Ruberoid Co.	26¾	23	23
Scott Paper Co.	40½	37⅜	38
Sutherland Paper Co.	26¼	24½	25½
Union Bag & Paper Corp.	17	13⅞	15¾
United Paperboard Co.	7⅜	6	6⅞
U. S. Gypsum Co.	83½	75	80½

New York Curb Exchange

High, Low and Last for the Week Ending September 29, 1937

	High	Low	Last
American Box Board Co.	14	11⅝	14
Brown Co., pf.	57	45½	55
Great Northern Paper Co.	37	36½	37
St. Lawrence, pf.	7	7	7
St. Regis Paper Co.	5½	4⅜	5⅛
St. Regis Paper Co., pf.	95	90	95
Taggart Corp.	7¼	6¼	7¼

Charge Delay in Brown Reorganization

[FROM OUR REGULAR CORRESPONDENT]

BERLIN, N. H., September 27, 1937—Charging that the Boston Bondholders' Protective Committee was unnecessarily delaying Brown Company reorganization and preventing the payment of more than $3,000,000 in past due interest, the Berlin Business Men's Association representing 125 bankers, merchants and professional men of this city, today urged speedy approval by bondholders of the reorganization plan.

In a resolution passed unanimously, the group pointed out that the payment of more than $145 in past due interest to each holder of a $1,000 bond as proposed under the plan, would put a large amount of money into circulation and increase prosperity in Berlin and New England.

The business men also stated that "continued delay was working unnecessary hardship upon the company and the security holders." In commenting upon the action of the business men, Milton Clarke, president of the association and a leading merchant said:

"Berlin business men and bankers have studied the reorganization plan carefully. We believe it is fair and just to all classes of security holders, as it proposes to pay 100 cents on the dollar to all creditors, and all back interest on the $21,415,000 bond issue. The plan has already been approved by over 80 per cent of the creditors and a large percentage of individual bondholders and stockholders."

"By enlarging production facilities at the La Tuque, Canadian properties as provided for under the plan, the Cascade Mill at Berlin will be insured a continuous supply of pulp. It seems unwarranted that criticism of the plan, emanating as it does solely from the Boston group, should be voiced on this point, as obviously the facts in the situation are not fully understood."

The Berlin Business Men's Association is the ninth civic organization which has openly endorsed the Brown Company reorganization plan.

Sutherland's Earnings Above 1936

Reflecting the normal summer lull in the paper board business, Sutherland Paper Company for the three months to end September 30 will probably show earnings under those for the second quarter this year but moderately above those in the third quarter of 1936, according to the *Wall Street Journal*. Last year Sutherland earned $227,604 or 79 cents a share on 287,000 shares in the third quarter. The second quarter this year had earnings of $276,165 or 96 cents a share.

With $491,435, or $1.71 a share, earned for the first half of 1937, third quarter net will put the total well above $700,000, for the first nine months compared with $627,806 in the like period a year ago and $729,116 or $2.54 a share for all 1936.

The last three months of 1936 had a year-end adjustment against earnings, which reduced the profit reported for the period to only $101,310, the lowest quarter of the entire year.

With two-thirds of Sutherland's output contracted for in the fourth quarter at fixed prices, the prospects for a substantial increase in profits appear good. The low level of earnings a year ago, however, would permit of a recession in business and still allow net to exceed a year ago, so that the full year's earnings should run well over the $2.54 a share earned last year and should approach $3 a share.

This year Sutherland will do a record dollar volume of business and profits are also almost certain to establish a new high.

Revise Paper Mill Assessment

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., September 27, 1937—Several paper mill concerns are the beneficiaries in revised assessments on their properties following protests to city authorities. The largest reduction was $33,900 on the assessment of Knowlton Brothers, the original figure being reduced from $243,900 to $210,000. The next largest reduction was on the former property of the Hinde-Dauch Company which was recently acquired by the Robert Gair Company, of New York City. The assessment of $54,000 was lowered to

$35,000 following a review by assessors. Taggart Brothers, Inc., also secured a reduction of $2,000 on its property on Newell street, the assessment being revised from $12,000 to $10,000. Only recently it was reduced ten per cent.

Great Northern To Spend $2,000,000

One of the largest new industrial developments in Maine in the past 10 years is expected to start next spring, when the Great Northern Paper Company, newsprint manufacturers at Millinocket, Me., will spend at least $2,000,000 on a power project at Mattaseunk.

William A. Whitcomb, president of the company, said in his office that the company had practically completed an engineering study of the development and would, in all probability, start work early in the spring. Borings to determine proper sites have already begun.

The site selected is about three and one-half miles north of Mattawamkeag on the main branch of the Penobscot River on property already owned by the company. The development is expected to create at least 18,000 horse power, which will be carried on large transmission lines to the Great Northern mills at Millinocket and at East Millinocket.

Company officials said that the power will be used by the company, which is the largest newsprint manufacturer in the United States, and currently operating at capacity levels.

The Great Northern is rated as a $42,600,000 corporation and is probably one of the two largest employers of labor in this State. Its timberland holdings in Maine are said to be equal to about five per cent of the area of this State, and it owns valuable water power sites as well.

Paper company officials throughout New England expressed considerable interest in the Great Northern announcement, since it is considered tangible evidence that the company is convinced of the future of the paper industry in the North as opposed to its progress in the South.

Buys Glens Falls Paper Products Co.

GLENS FALLS, N. Y., September 27, 1937—Bernard M. Radin, of Albany, has purchased the business and plant of the Glens Falls Paper Products Company and plans to form a new corporation to operate the local factory. For several years past the new owner has operated the Bernie Paper Box Company, Inc., in Albany, and plans to continue its operation in conjunction with the local plant. The transaction involved the building occupied by the concern as well as the business and equipment. Mr. Radin, who is president of the Bernie Paper Box Company, will serve as president and treasurer of the new concern. Other officers will include Mrs. Rose Radin, vice-president, and Charles Bernstein, secretary. Attorney Harry Singleton represented the Glens Falls Paper Products Company in the transaction.

Robert Gair To Pay Preferred Dividend

A dividend of 75 cents a share upon the preferred stock of Robert Gair Company, Inc., has been declared. The dividend is payable September 30 to preferred stockholders of record at the close of business September 27, without closing of transfer books.

Michigan Superintendents Meet

KALAMAZOO, Mich., September 27, 1937—The first fall meeting of the Michigan Division of the Pulp & Paper Mill Superintendents' Association was held at the Park-American Hotel, Thursday evening, September 23, 1937, with forty present.

Following the dinner Chairman Otto F. Fischer, called the meeting to order. Secretary, Harry C. Bradford, read a letter from B. D. Millidge in which the plans for a membership plan embracing all the divisions, was outlined.

Roy Zellers, chairman of the Nominating Committee, then announced the slate of candidates for the officers for the ensuing year, which his committee had proposed. A motion was made and supported that the nominations be closed and the secretary requested to cast the unanimous vote of the members present, carried. The new line-up is as follows:

Dan Stacy, American Box Board, Grand Rapids, chairman; Roy Barton, Michigan Paper Company, Plainwell, first vice-chairman; Lester La Liberte, Kalamazoo Vegetable Parchment Company, second vice-chairman; Harry C. Bradford, Rex Paper Company, third vice-chairman; A. B. Perlick, Kalamazoo Vegetable Parchment Company, secretary-treasurer.

A rising vote of thanks was given the out-going officers and the newly elected ones responded.

John Cornell of the *Paper Mill*, gave a short talk. Field Secretary, Geo. W. Cragie, addressed the meeting outlining some of the plans already under way for the 1938 Convention to be held in Toronto. He also read a paper on "Anti-Friction Roller Bearings". A series of discussions on various subjects followed.

Among those noted at the tables were: E. V. Whittington, Rex Paper Company; Arnold Weller, Sutherland Paper Company; Mike Redmond, Kalamazoo Paper Company; Lawrence Lynd, Vanderbilt Company; M. S. Fogerty, Michigan Paper Company; L. H. La Liberte, Kalamazoo Vegetable Parchment Company; A. B. Perlick, Kalamazoo Vegetable Parchment Company; Robert B. Stewart, Kalamazoo Vegetable Parchment Company; Leonard McMaster and L. F. Knickerbocker, Asten Hill Mfg. Co.; Don Stacy, American Box Board Company; G. W. Cragie, field secretary National Association; F. L. Zellers, French Paper Company; Walter B. Hadley, Detroit Paper Products Corporation; C. J. McMahon, Appleton Woolen Mills; C. J. Christensen and M. S. Clark, Mathieson Alkali Works; John Cornell, *The Paper Mill;* H. E. Stratton, PAPER TRADE JOURNAL; A. W. Cole, Rex Paper Company; N. J. Cowie, Hathorne Paper Company; Homer Stafford, Hawthorne Paper Company; Leo A. Willoughby, Bryant Paper Company; Merrit Lawrence, General Electric Company; L. L. "Buster" Griffith, Heller and Merz Corporation; W. H. Astle, Michigan Paper Company; Richard "King" Tutt, Peter Cooper Corporation; P. M. Loddengaard, Bulkley, Dunton & Co.; Al. Sherwood, Sutherland Paper Company; O. F. Fischer, Bryant Paper Company; O. W. Callaghan, Edgar Brothers.

Grinding Lubrication

"What's New in Grinding Lubrication" is the title of a booklet issued by D. A. Stuart & Co. of Chicago, Ill., describing the use and application of Stuart's "Codol" liquid grinding compounds.

Obituary

Charles A. Brown

Charles Alva Brown, 74, retired Boston paper manufacturer and merchant, died September 20 at his home, 40 Chestnut street, Salem, Mass.

Born in Portland, Me., on February 1, 1863, he was a son of Charles Denison Brown and Abba Shurtleff Brown. He was graduated from Dr. Hickson's School in Newburyport, and Massachusetts Institute of Technology in 1885. He was at one time a partner in his father's firm, the Charles D. Brown Company of Boston, paper manufacturers and merchants. In recent years he was board chairman of the Charles D. Brown Company, Inc., of Boston, which succeeded his father's organization. In addition, he was vice-president of the Manufacturers Improvement Corporation and a director of James Talcott, Inc., of Boston.

Surviving him are his wife, the former Miss Eliza Baldwin Rogers, whom he married in 1891, and four children, Amos Howard Calef Brown of Wellesley, Charles Denison Brown of Newton, Olcott Mitchell Brown of Geneva, N. Y., and Mrs. Donald T. Hood of Brookline. He had thirteen grandchildren. Funeral services were held September 22 in his home. Burial was private.

Fred E. Lee

KALAMAZOO, Mich., September 27, 1937—Fred E. Lee, 78, who organized the Lee Paper Company at Vicksburg, Mich., in 1903 and served as president of that company for nearly thirty years, died at his home in Dowagiac, Mich., on September 21, 1937. He was chairman of the board of directors of the Lee Paper Company at the time of his death.

Born in Dowagiac on December 6, 1858, he spent his lifetime in that community where his various interests and activities were outstanding. Had served as mayor, was chairman of the board of the Lee State Bank and its former president, was general manager of the Beckwith Estate, which includes the Round Oak Furnace Company. Among his many philanthropies was the Lee Memorial Hospital, Dowagiac.

Mr. Lee was a life-long Republican and previous to his retirement from active duties was prominent in the affairs of that party, being frequently mentioned as a candidate for the Governorship of Michigan.

Surviving are his widow, Mary Gray Lee, a sister, Mrs. Ralph Emery, Kalamazoo, and a brother Ray Lee of Vicksburg.

New Felt Guide by Shartles

A felt and wire guide hydraulically operated and with the sensitive element mounted on anti-friction bearings has been developed by Shartle Brothers of Middletown, Ohio.

Tests being conducted in actual mill operation disclose unusual accuracy in holding the felt constantly in trim, it is said. Officials of the company state that during a recent 24 hour test run, the felt was held within ⅛ inch of perfect alignment, at no time moving more than this amount out of position.

To Hold Election at Covington

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 29, 1937 — The National Labor Relations Board has directed that an election be held within 15 days among the employees of the West Virginia Pulp and Paper Company, Covington, Va.

The secret ballot has been called to determine whether the employees desire to be represented by Local No. 152, International Brotherhood of Pulp, Sulphite and Paper Mill Workers or by the Employees' Protective Association, Covington Mill, for the purposes of bargaining collectively with the management.

Request for the election was made July 2 by the Brotherhood. On August 16, a hearing was held at Washington, D. C., before Trial Examiner James G. Ewell. All parties consented to the jurisdiction of the Board, as well as to the intervention of the Association in the hearing.

The company's headquarters are in New York. It is engaged in the manufacture and distribution of pulp and paper products and chemical by-products. There are approximately 1,800 workers at the Covington Mill, of which number about 110 are on a salaried basis.

Local 152, International Brotherhood of Pulp, Sulphite and Paper Mill Workers is a labor organization admitting to membership all workers in the Covington mill except supervisory, clerical and salaried employees. The EPA also admits all workers except supervisory, clerical and salaried employees. All parties agreed that the appropriate bargaining unit should include all the workers at the Covington mill except those compensated on a salary basis.

The Brotherhood claims to represent more than 1,000 workers, while the EPA claims jurisdiction over about 1,100 employees. The company has refused to deal with either organization as the exclusive bargaining agency until after certification by the board. Meanwhile, it has said it will bargain with each organization for its own membership.

Rotary Displacement Meters

In a new bulletin 40-B-12, "Rotary Displacement Meters," the Roots-Connersville Blower Corp., Connersville, Indiana, describes not only the general operating principles of the meters, but also lists meters for smaller volumes than in previous bulletins.

Typical proof curves, illustrations of advanced meter design, and views of installations of meters in many different kinds of service, in this and foreign countries, are shown in this new bulletin.

In addition to the standard low pressure meters for line pressures ranging up to 25 lbs., there are listed the high pressure type for maximum pressure of 125 lbs. A special construction for pressures of 300 lbs. or more is illustrated.

Other illustrations in the bulletin show Connersville Meters on industrial and commercial consumer installations, where they are used as departmental meters as well as the master plant meter; testing air and gas flow in university laboratories; measuring sludge gas in sewage disposal plants; metering hydrogen and oxygen in chemical plants; and recording the fuel consumption of gas engines.

Says We Export American Jobs

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 27, 1937.—Alexander Thomson, chairman of the Board of the Champion Paper and Fibre Company, director of the United States Chamber of Commerce and president of the Ohio Chamber, brought vividly to mind the disadvantages of the importation of foreign goods under present conditions, when he addressed a meeting of the Hamilton Rotary Club at the Boy Scout camp maintained by the paper company on the Darrtown Pike, last Thursday night.

Since the reciprocal trade treaty with Canada became effective, the United States has imported 25 per cent more of Canadian products and exported 26 per cent less, he stated.

Importation of foreign goods is really the export of American jobs, he asserted.

"A few months ago a manufacturer of electric lamps showed me a telegram which closed one of his plants, throwing 600 men out of work," said Mr. Thomson, "because of competition from Japanese manufacturers.

"I wonder if the Japanese will support these families who are destitute?" he asked. "He also said that this shutdown was in addition to the shorter work week for 3500 other persons, also due to competition from Japan.

"As long as we cannot take pay in gold for the goods we export, we must take pay in goods," he said.

"We have all the gold. So when a foreign nation buys a machine from us, we, for instance, must take pay in fountain pens. We are thus exporting the jobs of the persons employed in the manufacture of fountain pens.

"We should only import those things which are not produced or manufactured in this country. And we, at the same time, should be looking for substitutes for the things that we do import.

"Formerly all of the tinfoil was imported. It came from China, but now a better and brighter and cheaper tinfoil is made from aluminum, providing more jobs for Americans."

Mr. Thomson said there was no place in the world where working conditions could compare with those in this country and where the working people were as well provided for.

"The United States is one-half of the world's markets, so why should we trade this market for one which requires higher freight rates, more insurance and long-time credits?" he concluded, amidst the applause of the Rotarians, who had invited him to address their organization.

Begins 47th Year Service in Industry

William J. Brown, of Montreal, Quebec, Canada, will shortly begin his forty-seventh year of continuous service in the paper industry. He first became associated with the Laurentide Paper Company, Limited, on September 21, 1891 and subsequently continued with the successor companies; the Consolidated Paper Company, Limited, and the St. Maurice Valley Paper Company, Limited. Mr. Brown is today a member of the sales organization and is accredited with a wide knowledge of the paper and printing trades.

Sends Gift to Swedish Laboratory

The steamer Drottningholm, which sailed for Sweden on September 23, carried a General Electric Reflection Meter which D. S. Gottesman, 22 West 40th street, New York City, has presented to the Cellulosaindustriens Centrallaboratorium, (Swedish pulp industry's Central Laboratory) Stockholm, Sweden.

This machine, otherwise known as a "Brightness Tester" is manufactured by the Institute of Paper Chemistry, Appleton, Wis. in conjunction with the General Electric Company. It is a photoelectric instrument designed to give the reflectance of the paper samples to various colors of light (approximately monochromatic) in terms of the reflectance of a standard white.

Mr. Gottesman is presenting this apparatus to the Cellulosaindustriens Centrallaboratorium for the express purpose of promoting the general good will existing between the United States and Sweden and especially the cooperation existing in the pulp and paper industries of the two countries.

This machine will be available for use of all the members of the Central Laboratory for educational and scientific purposes and is not intended to be used commercially or offered for sale.

D. S. Gottesman is president of Gottesman & Company, Inc., New York City and Stockholm, Sweden, which company has been associated with the pulp and paper industry since 1886.

Mr. Gottesman is also president of the Central National Corporation, an investment banking company, and president of the Allied National Corporation. He was formerly chairman of the board of directors of the Central National Bank, New York City, which has since been merged with the Bank of the Manhattan Company, New York City.

Concerned About Duty Removal

VANCOUVER, B. C., September 27, 1937—Considerable alarm is felt in British Columbia over the Japanese decision to remove all duty on October 1 from wood imported for pulp manufacture in Japan. The situation is rendered acute by the extensive purchases of lumber on Vancouver Island recently by Japanese interests, who apparently posted on the action of their government have acquired large timber stands. In some of these stands cutting has already commenced employing B. C. Japanese workers almost entirely. B. C. Government officials fear the new action by Japan will result in wholesale exportation of timber from British Columbia, which will not only deplete resources of the province, but directly compete with B. C. produced pulp on the Japanese market.

The British Columbia Government under existing laws is not in a position to prevent this exportation of pulp logs as the timber limits secured by alleged Japanese interests are all crown-granted land over which the Provincial Government has no control. Logs cut under ordinary timber licenses can only be exported when the provincial export control committee gives consent, and this is only obtainable when for some special reason logs cannot be manufactured in British Columbia.

In addition the B. C. Government has no official information on the purchases of crown-granted timber by Japanese interests, as these have been made through Canadian companies incorporated for the purpose.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, and Operation of Pulp and Paper Mills

General Construction News

Holmesburg, Pa.—The Light Corrugated Box Company, Trenton avenue and Venango street, Philadelphia, Pa., manufacturer of corrugated boxes and containers, has arranged for purchase of mill of the Toronto Carpet Company, Toronto, Ont., at Holmesburg Junction, formerly occupied by Barrymore Seamless Wiltons, Inc. The property comprises about 8¼ acres of land, bounded by Decatur, Edmund, Tulip and Shelmire streets, improved with a main one-story sawtooth roof type building, office structure, boiler house and miscellaneous buildings, totaling about 72,000 square feet of floor space. New owner will remodel and improve at once, and will equip for new plant, removing present factory to new location and installing additional equipment for large increased capacity. A former dye house will be converted for a storage and distributing building. The plant has been acquired for a reported consideration of about $200,000.

Wilmington, Del.—The Arctic Roofing Company, recently organized under Delaware laws to manufacture prepared roll roofing, roofing papers, etc., has acquired tract of land at Edge Moor, Wilmington, adjoining factory of the Krebs Pigment & Color Corporation, as site for new plant, for which superstructure will be placed under way soon. New unit will be one-story, totaling about 60,000 square feet of floor space, estimated to cost over $70,000, including equipment. New company is headed by Charles W. Bayliss, president; W. Freegard, vice-president; and J. B. Lichenberger, secretary.

Newark, N. J.—The Specialty Paper Box Company, Inc., 1 Central avenue, East Newark, manufacturer of paper boxes and containers, has leased main floor in building at 314-16 Ogden street, Newark, totaling about 4,000 square feet of floor space, and will improve and equip for expansion, primarily in storage and distributing division.

Chicago, Ill.—The Illinois Shipping Container Company, 1520-30 West Pershing road, manufacturer of folding paper boxes and containers, solid fiber cases, etc., has awarded general contract to the Anderson & Winblad Company, 6235 South Michigan avenue, for new addition to plant, recently noted in these columns. It will be two-story, instead of one-story as previously noted, 42 x 100 feet, estimated to cost close to $50,000, including equipment. Superstructure will be placed under way at once. A. Epstein, 2001 West Pershing road, Chicago, is architect and engineer.

Chicago, Ill.—The Meyercord Company, 208 West Washington street, manufacturer of paper decalcomania transfers, etc., has approved plans for new addition to plant, to be two-story and basement, 50 x 100 feet, located at West Lake street and North Long avenue. General contract for erection has been awarded to John Jucker, 230 East Ohio street, and superstructure will be placed under way at once. Cost estimated close to $55,000, including equipment. Julius Floto, 176 West Adams street, Chicago, is engineer.

Minneapolis, Minn.—The Ruberoid Company, 500 Fifth avenue, New York, N. Y., manufacturer of prepared roofing products, has acquired the plant and business of the Gold Seal Asphalt Roofing Company, Minneapolis, manufacturer of kindred roofing specialties, and will consolidate with organization. The transfer will become effective on December 1, 1937, at which time purchasing company will make improvements in the Minneapolis plant, with installation of equipment for the production of Ruberoid roofing specialties. This will make the tenth plant of the Ruberoid Company in different parts of the country.

Millinocket, Me.—The Great Northern Paper Company has plans under way for a new hydroelectric power development on the main branch of the Penobscot River, in vicinity of Mattaseunk, Me., for increased power service for paper mill at Millinocket. Project will comprise a power dam, hydroelectric generating station equipped for initial capacity of 18,000-horsepower, power substation and transmission line to mill site, and is estimated to cost close to $2,000,000. Work is scheduled to begin in near future.

Brooklyn, N. Y.—The Brooklyn Paper Box Corporation has been incorporated with capital of 200 shares of stock, no par value, to manufacture paper boxes and containers. New company will take over and operate the Brooklyn Paper Box Company, with local plant at 289 Greenpoint avenue.

Franklin, Va.—The Chesapeake-Camp Corporation has awarded contract to the Richmond Structural Steel Company, Richmond, Va., for about 120 tons of fabricated steel for conveyor supports and other steel structures at new pulp and paper mill, now in course of erection. Work on different mill units is proceeding rapidly and new mill is expected to be ready for service before the close of this year. As previously noted in these columns, it is estimated to cost about $3,000,000, with equipment. The Rust Engineering Company, Clark Building, Pittsburgh, Pa., is general contractor for project. The company is a joint subsidiary of the Albemarle Paper Manufacturing Company, Richmond, Va.; Chesapeake Corporation, West Point, Va.; and the Camp Manufac-

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BIRD SCREENS

YOU CAN MAKE MORE MONEY WITH NEW BIRD MACHINERY

turing Company, Franklin. J. L. Camp, Jr., is president.

Fort Dodge, Iowa—The National Gypsum Company, Fort Dodge, manufacturer of wallboard and kindred building products, is planning early rebuilding of portion of local mill, recently destroyed by fire, with loss estimated at $200,000, including equipment. Reconstruction will cost approximately a like amount. Main offices of company are at 190 Delaware avenue, Buffalo, N. Y.

Camden, Ark.—The Southern Kraft Corporation has contracted with the Arkansas Power and Light Company, Pine Bluff, Ark., for additional power supply at mill, totaling about 3,000-horsepower, and will arrange facilities at mill to handle the increased load. The power company will construct a new power substation at mill site, to cost about $50,000, with transformers, switching and other equipment. Work is scheduled to be placed under way at once.

Brooklyn, N. Y.—The Plastergon Wall Board Company, 196 Philadelphia avenue, Buffalo, N. Y., manufacturer of wall board products, has recently leased a one-story building, 130 x 200 feet, on Wythe avenue, Brooklyn, extending from Hooper to Keap avenues, and will occupy for new factory branch, storage and distributing plant.

Brooklyn, N. Y.—The Marcy Paper Box Company, Inc., recently organized with capital of 200 shares of stock, no par value, plans operation of a local plant for the manufacture of paper boxes and containers. New company is represented by Saul Pulver, 225 West Thirty-fourth street, New York.

Bellingham, Wash.—The Puget Sound Pulp and Timber Company, Army street, manufacturer of sulphite pulp, has awarded general contract to H. S. Wright & Co., 2210 Second avenue, Seattle, Wash., for a group of 18 new one and multi-story units at local mill, in connection with expansion program at plant, recently referred to in these columns. Work on superstructure will be placed under way soon. Different units will include a digester building, drying machine building, screen house, acid plant, laboratory, boiler plant, storage and distributing buildings and other structures, with erection cost to approximate $400,000, exclusive of machinery. New extensions will be equipped for a capacity of about 40,000 tons of pulp per year, making a total rating of about 100,000 tons per annum for the entire mill. Entire project is scheduled for completion in 1938 and will cost approximately $2,600,000, with machinery. Ralph M. Roberg is general manager.

Cornwall, Ont.—The Howard Smith Paper Mills, Ltd., 407 McGill street, Montreal, Que., manufacturer of bond and other writing papers, box board and kindred paper and paper board stocks, is considering construction of new one-story addition to mill at Cornwall, for which plans will be completed at early date. It will cost close to $200,000, including equipment.

Port Arthur, Ont.—The Ontario Paper Company, Ltd., has preliminary plans under way for new one-story barking mill in vicinity of Port Arthur, to be used in conjunction with timber operations in that area. Company also is considering a new hydroelectric power development on the Black River, Heron Bay district, approximately 175 miles East of Port Arthur, consisting of power dam, hydroelectric generating station, power substation and switching station, and transmission line. Power supply, similarly, will be used for lumbering operations. Entire project is reported to cost over $650,000.

Toronto, Ont.—The Acme Paper Box Company, Ltd., 388 Carlaw avenue, manufacturer of paper boxes and containers, and other paper products, has plans under way for rebuilding portion of plant recently destroyed by fire, to be one-story, 100 x 200 feet, used primarily for storage and distribution. Bids are scheduled to be asked on general contract soon. A. Sprachman, 305 Dundas street West, Toronto, is architect.

New Companies, Etc.

Chicago, Ill.—The Packit Envelope and Bag Company has been incorporated with capital of 500 shares of stock, no par value, to manufacture paper specialties, envelopes, etc. New company will take over and operate the organization of same name, with local plant at 910 West Lake street. The incorporators include E. E. and K. M. Perkins, and E. J. Guinane.

New York, N. Y.—The American Pulp Export Corporation has been chartered with capital of 500 shares of stock, no par value, to deal in pulp products. Purdy, Mason & Lamb, 80 Broad street, New York, attorneys, are representatives.

Wilmington, Del.—The Globe Roofing Products Company has been chartered in Delaware under the direction of the Corporation Trust Company, Industrial Trust Building, Wilmington, to manufacture and deal in prepared roofing, roofing papers and allied specialties, with capital of $150,000.

Indianapolis, Ind.—The Beach & Arthur Kleen Products Company, 2900 Columbia avenue, manufacturer of paper specialties, has arranged for change of company name to the Beach & Arthur Paper Company.

B. C. Pulp Co. Installs Equipment

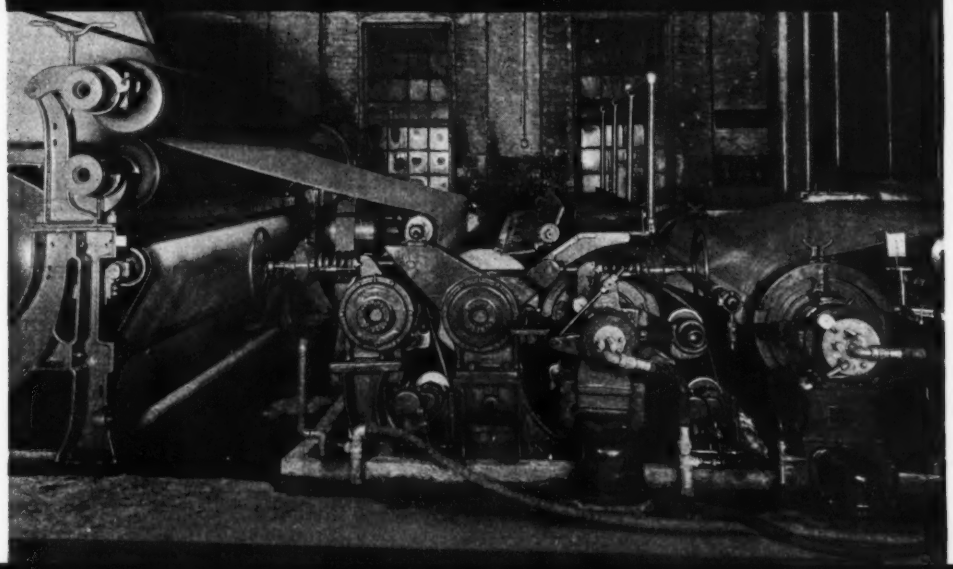
VANCOUVER, B. C., September 27, 1937.—Installation of new equipment is making favorable headway at the plant of the B. C. Pulp and Paper Company Ltd. at Woodfibre B. C. where approximately $600,000 is being expended on erection of a reinforced bleace building, oil house, filter plant and water tank tower. The bleach building concrete has been poured and erection of the roof is now under way. The Dominion Bridge Company Ltd., through their Vancouver B. C. branch, are supplying four 10 ton capacity caustic cookers.

With the erection of the new plant the B. C. Pulp and Paper will enter the bleached pulp field, whereas formerly they were engaged only in production of unbleached pulp.

The new bleach building of reinforced concrete will be 110 feet by 64 feet with a wing at one end measuring 34 by 11 feet. Liquor tanks and a laboratory will be housed in this wing. On the main floor 15 circular reinforced concrete tanks are being erected, as well as three reinforced concrete dump chests and six seal boxes, also of concrete construction. The oil house is a reinforced concrete building with an area of 16 by 40 feet.

Two new turbo generators are being installed by the company's own crew to provide power for the bleach plant. Equipment required for the bleaching process is being supplied by the Pulp Bleaching Corporation of Montreal.

A YEAR OF PROGRESS



BELOIT HORIZONTAL
Dual Press
PATENTS PENDING

• During the first year 7 Beloit Dual Presses were installed and are now running making a variety of papers.

There are 16 additional Dual Presses being constructed and these will be in operation soon.

This new type Press has received world-wide recognition and is considered by many the most outstanding improvement in paper machines in recent years.

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS BELOIT WISCONSIN

Paper Loop Held Accurately By Photo-Electric Control

By W. I. Bendz[1]

There are several processes found in the manufacture of paper requiring a loose loop of paper between two independently driven sections of the machine performing the process. Applications where the position of the loop is not particularly important have been successfully fulfilled in the past by a "dancer roll" rheostat controlling the speed of an adjustable speed DC motor, or an AC wound rotor motor; but where the loop must be positioned accurately, photo-electric control is being increasingly applied.

While the "dancer roll" method is simple, it has two very definite limitations that prevent its use in many cases. First, the loop is weighted down by a roll sufficiently heavy to produce a turning force great enough to operate the rheostat. Second, the position of the loop must change in order to turn the rheostat and bring about any compensation in motor speed.

There are many applications where it is objectionable to touch the material with a roll regardless of its weight, and some processes require that the loop be held close to a constant position.

Loop Held to Close Limits

Operating examples of applications holding close regulation of a loop by photo-electric control to avoid mechanical contact with the material, are the paper pasting machine and paper coating machine, figures No. 1 and No. 2, respectively. Such control can be applied to existing machines without modification of present drives.

Two entirely different schemes of control are in use for this purpose. The first to be described is intended to be used where the two sections of the machine are driven from a common driving motor or any form of prime mover. The sections are coupled with any form of variable speed transmission of which the Reeves drive is a typical example. The second scheme described is used when the two sections are driven by two independent motors of which the one to be regulated is an adjustable speed DC motor.

[1] Industrial Dir., Westinghouse Electric and Manufacturing Co., Boston, Mass.

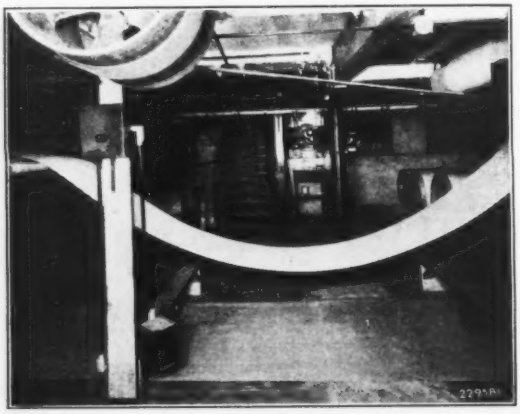


FIG. 1
Regulating loop of a pasting machine.

Pasting Machine Control

Fig. 1 shows the paper loop between two sections of a pasting machine. The entire machine is driven by a DC motor (not shown), and the reel-end section is coupled to the main drive shaft through a double cone variable speed transmission (not shown). The position of the belt between the double cones control the speed of the reel section. The belt is moved along the cone by a small gearmotor driving a worm and screw.

Two light sources project a beam of light across the loop of paper. The lower beam is intercepted when the loop gets too low, and the upper beam is intercepted if the loop rises too high. Two photo-electric relays are located as to be illuminated by the two light beams. These relays are connected so that their control contacts are closed when light on the phototube is decreased, as when the paper loop intercepts either light beam.

A cabinet containing control relays is shown mounted on a post at the upper left of Fig. 1. These relays control a small gearmotor operating the speed changing device in such a way as to prevent hunting. If the loop changes position so as to intercept either light beam, the small gearmotor shown at the top center of Fig. 1 will move the belt between the cone pulleys in the proper direction to change the speed of the reel section and bring the loop back to its normal position between the light beams.

This control is applicable to any drive using a mechanical transmission between the two sections. The placing of the light sources and relays will differ for each installation since it is desirable in every case to place the units where they will not interfere with operators performing routine duties about the machine. The light sources and photo-electric relays can be located wherever convenient so long as the two beams are separated approximately one foot (vertically) and will be intercepted by the loop. The only necessary mechanical connection with the machine is the small gearmotor to turn the mechanical device which controls the speed of the variable speed transmission.

Low Maintenance

The installation in Fig. 1 has been functioning continously with minimum tube replacement and maintenance of control relays. Previous to installing the regulating apparatus, an operator was required on duty to control the loop whenever the machine was operating. This duty has been completely eliminated, and the machine is now threaded

up, started, or stopped without any attention to regulation of the loop. In fact, no operator is ordinarily within sight of the loop.

Holding Loop on Paper Coating Machine

The installation in Fig. 2 is applied to a paper coating machine of the double coating type in which the sheet is floated by warm air jets. Conditions to be met for regulation of the loop are most severe. First, the loop should be held within a variation of about eight inches, and, second, the delivery speed of the sheet is apt to change rapidly over wide limits, thereby demanding almost instantaneous correction of the loop. Obviously, the control just described for Fig. 1 would not meet these conditions since it would not be possible to shift the speed of the mechanical transmission rapidly enough to take care of sudden large changes in delivery speed.

For this application, the section to be regulated (in this case the old-back rolls) is driven by its own adjustable speed DC motor. The speed of this motor is controlled by a motor-operated rheostat connected in the shunt field circuit.

A simplified schematic diagram of the control system is shown in Fig. 3. Tho photo-electric relays are shown as P-1 and P-2, and two light sources are S-1 and S-2. When the loop is in the proper position, the beam of S-1 is intercepted by the loop, and the beam of S-2 is not intercepted. If the loop rises far enough to allow S-1 to illuminate P-1, the control contacts in P-1 will close. If the loop lowers to intercept the beam of S-2 the contacts of P-2 will close. The two photo-electric relays P-1 and P-2, the motor-operated rheostat, and the shunt field winding of the DC driving motor all connect with relays contained in an auxiliary control cabinet.

Quick Response Used

If the loop should be lowered to the point where the beam of S-2 is intercepted, photo-electric relay P-2 will function and cause the motor-operated rheostat to move in the direction to speed up the driving motor. However, if this were the only function, the correction would take such a long time that the loop would possibly get out of control. Consequently, to take care of immediate response, one of the auxiliary control relays instantly causes

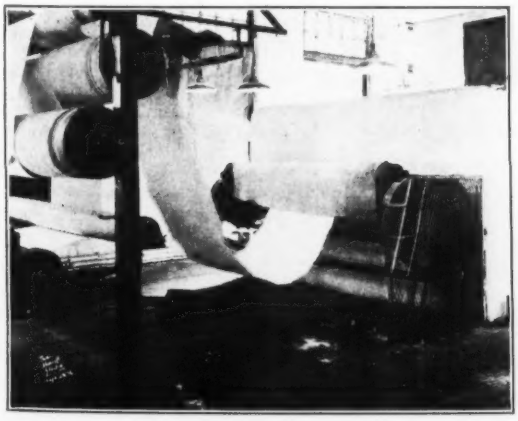


FIG. 2
Loop of coating machine regulated by photo cells

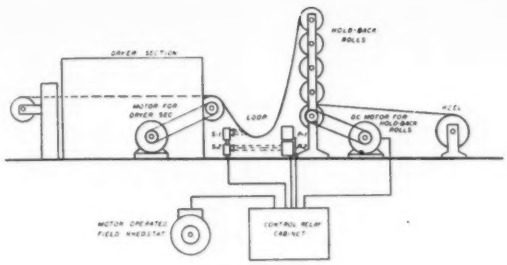


FIG. 3
Diagram of apparatus to regulate pasting machine.

the driving motor to accelerate towards its maximum speed regardless of the motor-operated rheostat. This condition of forced acceleration lasts only long enough to bring the loop back to its normal position, and then the auxiliary relays allow the driving motor to return to the speed determined by the new position of the rheostat. The same sequence of events takes place when the loop rises to uncover the beam of S-1 except that the driving motor is slowed down.

By this system of control, the delivery speed of the sheet of paper may vary over any limits within the speed range of the motor driving the section being regulated without losing control of the loop. Furthermore, the loop will not move outside the limits of the light beams except for a negligible amount.

Operating Experience Reveals Advantages

Operating experience with such electronic regulating schemes have shown that:

1. The cost of installing photo-electric control is reasonable, and under average conditions where an operator is employed to control the loop, the equipment will pay for itself in less than a year.
2. The electronic apparatus is thoroughly reliable and does not require more frequent maintenance than any other electrical apparatus.
3. Electronic control is extremely convenient since there is nothing to interfere with an operator tending the machine when threading-in or mending a paper break. During this period, a conveniently located switch may be used to disconnect the regulator.
4. Electronic control is applicable to (a) machines employing a mechanical drive between sections or, (b) to machines in which the regulated section is driven by a separate DC adjustable speed motor.
5. The speed of response of the latter scheme is such that the loop of any form of machine can be held within practical limits.

Newsprint Service Bureau Gets Award

WASHINGTON, D. C., September 29, 1937—The American Trade Association Executives has announced that the Newsprint Service Bureau has been awarded a certificate of recognition.

In making the award to this association and several others the association said that "the great interest shown by other trade associations in the annual award competition, prompted the A.T.A.E. to offer certificates of recognition. Exhibits entered by this association and 21 others were judged worthy of these certificates."

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY—Fall Convention, DeSoto Hotel, Savannah, Ga., Oct. 18-20, 1937.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

DISTRIBUTION COSTS

Although the costs of distributing commodities is high, the costs of production are relatively higher. About 40 per cent of the total value of manufactured products in 1935 was expended in production, while about 33-1/3 per cent was expended for distributing the same commodities.

In general, the cost of distributing commodities is not too high, according to Nathanael H. Engle, assistant director of the Bureau of Foreign and Domestic Commerce, in an address at the 9th Conference on Distribution, held at Boston last week.

"I do not deny that distribution costs are high," said Mr. Engle, "neither would I deny that the costs of marketing particular commodities may be excessive. What I do believe, on the basis of such facts as are available, is that distribution costs over a wide range of commodities are not excessive, either as a measure of the marketing functions performed or when compared with production costs. I would agree that costs of distribution are too high only insofar as all costs are too high. The economist may argue with some validity that costs of production and marketing always tend to be too high.

In an economic sense, the speaker pointed out, cost is a barrier to consumption and costs and prices should be kept down so far as possible to build higher standards of living. "Costs, in this sense of the term," he stated, "do not refer to money outlays but rather to the more fundamental conception of expenditure of human energy. In the final analysis, money outlays may be resolved into payments to labor which are necessary to induce men and women to overcome the scarcity of economic goods. Costs, used in this sense is obviously a limitation on consumption. It is for this reason that the cry persists that distribution costs are too high."

According to Mr. Engle, the total cost of distributing the entire domestic production of manufactured goods for the year 1935, based on data from the Bureau of the Census, was about 15¼ billion dollars. This amount included all marketing costs of manufacturers, wholesale, and retail agencies.

In seeking a basis for comparison, Mr. Engle compared the cost of merchandise distribution with the costs of manufacturing the same merchandise. He thus utilized as a measure of the costs of production, the value added by the manufacturing process. This measures the net addition of the value of commodities in existence, such as raw materials, semi-manufactured materials and fuel.

"In 1935," Mr. Engle said, "it cost in excess of 19 billion dollars to produce the total of manufactured products. Because of the indeterminate amount of duplication between this figure and the data on distribution costs, allowances of as much as a billion dollars must be made, which reduces the total cost of production to about 18¼ billion dollars. Thus it appears that some 40 per cent of the total value of manufactured products in 1935 (the latest figures available, as the Bureau of the Census is taken bi-annually and released the following year) was expended in production, compared with about 33-1/3 per cent for distribution of the same commodities. Measured in terms of the national income, distribution costs amounted to about 28 per cent of the total income paid out in 1935, while production costs approximated one-third of the total.

The above comparison assumes that the functions of production and marketing are of comparable importance, which in Mr. Engle's opinion is open to argument. Both are indispensable to the satisfaction of the wants of the consumer. "From the economic standpoint it is necessary to consider the changes which have taken place in distribution. Manufacturing processes have become increasingly mechanized and standardized, if not simplified in recent years. Marketing processes, on the other hand, have tended to become more complex.

In touching upon the cost accounting for specific commodities, the speaker said that "there is little information on this subject. Some data were collected for a few items in a pioneering study made as early as 1921. The difficulty is, that the problem is primarily one of cost accounting, and techniques of distribution cost accounting have received scant attention until very recently. There has been but a limited application of cost accounting for distribution in the business world.

"To find out how much it costs to distribute commodities, the Bureau of Foreign and Domestic Commerce has set up certain cost accounting standards which recognize four major groups into which distribution cost expenses may be placed on a commodity basis. These are the costs of maintenance, movement, promotion and reimbursement. Maintenance is subdivided further into investment and storage, while movement is broken down into handling and order routine. All distribution expense items are thrown into one or more of these classes on a scientifically predetermined basis wherever possible.

"For direct costs, an arbitrary standard must be applied. In addition to measuring costs by commodities, this same technique may be applied to the allocation of marketing costs to customers, to salesmen, or salesmen's territories, or in various other ways. The work of the Bureau has been largely experimental in this field, but a number of studies have been made in the past and others are planned for the future.

"To accomplish a thoroughly satisfactory study of marketing costs, a staff of trained cost accountants is required to measure by a constant standardized pattern the cost of speeding commodities on their way from producer to ultimate consumer at every stage of the marketing process."

In conclusion Mr. Engle, in recapitulating the points covered said that: "First, total distribution costs do not appear to be too high in view of the magnitude of the distribution load, and when compared with the total costs of production, there is little evidence to support the popular wail that they are excessive. Secondly, the cost of distributing individual commodities varies widely, with some indication that durable consumer's goods are slightly more expensive to market on the average than are convenience items. A precise and accurate measure of distribution costs must await the application of more refined accounting methods.

Columbian Paper Co. Elects Directors

[FROM OUR REGULAR CORRESPONDENT]

BUENA VISTA, September 27, 1937—Stockholders of Columbian Paper Company at their annual meeting increased their number of directors from five to eight. New members elected were: George B. Garrett and J. Maurice Kelly, Philadelphia and J. Frank Key, Buena Vista.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3% (c)	76.1%	65.8%	.....
February	90.1% (c)	77.9%	70.0%	.....
March	90.3% (c)	76.0%	70.5%	.....
April	92.1% (c)	82.3%	70.0%	.....
May	90.6% (c)	81.6%	69.4%	.....
June	87.3% (c)	80.7%	72.3%	.....
July	81.8% (c)	77.3%	64.9%	.....
August	82.9% (c)	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
Year Average	.....	81.3%	70.5%	.....
Year to Date First 37 weeks	87.3%	79.0%	69.1%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*September 4	80.4%	September 5	81.0%
*September 11	(h)67.2%	September 12	(h)71.2%
*September 18	82.3%	September 19	85.7%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks		
Ratio Limits	Sept. 4, 1937	Sept. 11, 1937	Sept. 18, 1937
0% to 50%	71	108	55
51% to 100%	242	207	153
Total Mills Reporting	313	315	208

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

Mos.	1937	1936	1935	1934	Mos.	1937	1936	1935	1934
Jan.	80% (e)	61%	61%	....	July	67% (e)	69%	59%	....
Feb.	86% (e)	67%	67%	....	Aug.	74% (e)	75%	65%	....
Mar.	87% (e)	68%	67%	....	Sept.	....	76%	69%	62%
Apr.	89% (e)	70%	61%	....	Oct.	....	82%	76%	63%
May	86% (e)	68%	61%	....	Nov.	....	79%	70%	56%
June	75% (e)	68%	65%	....	Dec.	....	74%	60%	52%

Week end. Sept. 4, 1937—73% Week end. Sept. 11, 1937—59% (h)

Week end. Sept. 18, 1937—73%

(e) Basic figures revised to include new members of the National Paperboard Assn.
(h) Holiday week; percentages based on six days' operation.

Davis Container Co. to Start in Dayton

[FROM OUR REGULAR CORRESPONDENT]

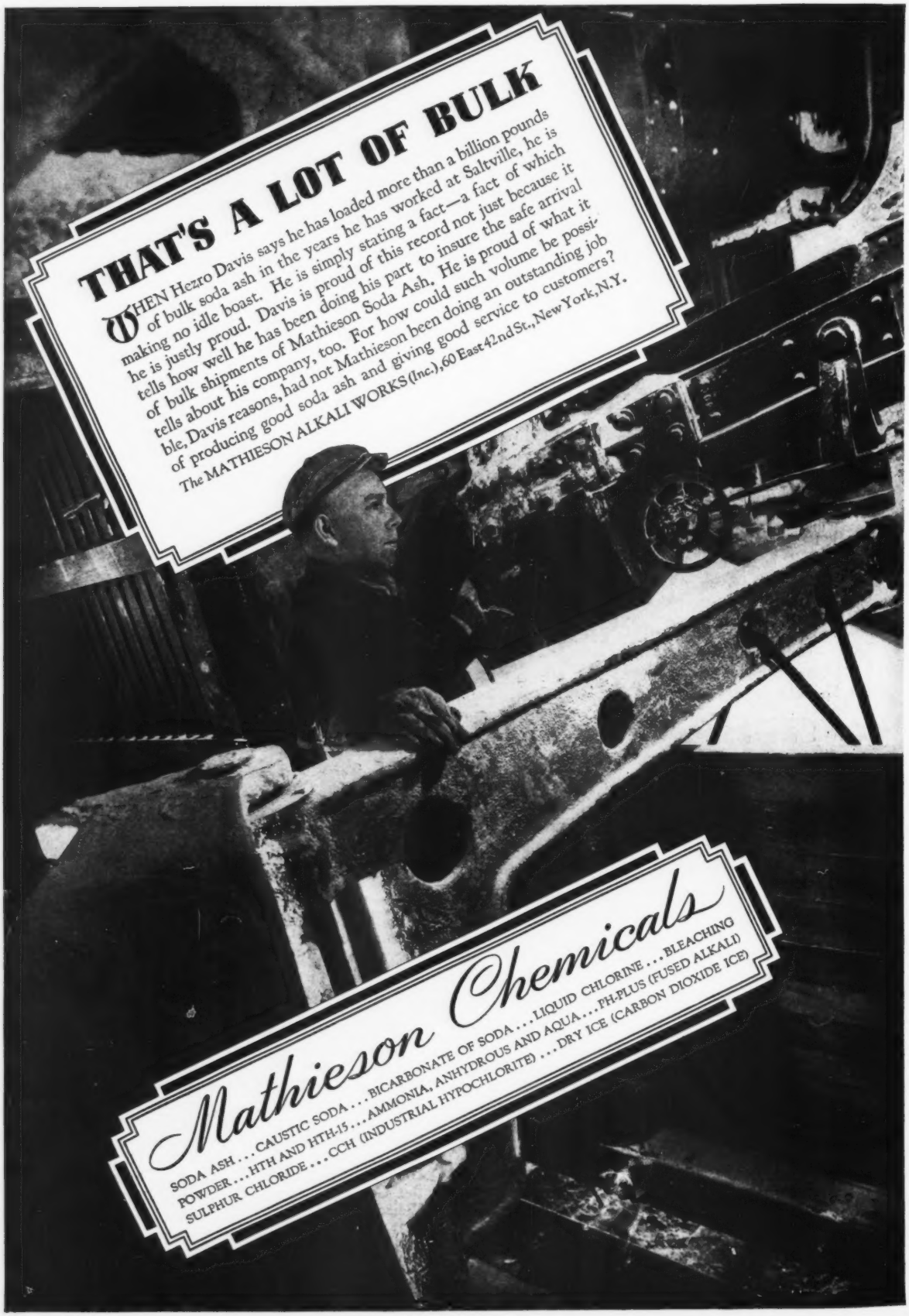
DAYTON, Ohio, September 27, 1937—The Davis Container Company, a new concern which will manufacture corrugated boxes and containers, will begin operations in this city on October 1, it was announced this week.

The company will be located on Ringgold street, in the east central industrial section of Dayton, in a two-story building recently vacated by the National Biscuit Company.

The company was chartered in Columbus last Friday and authorized to issue 250 no par shares. The incorporators were Paul J. Fleischaur, Virginia A. Hollman and Margaret T. Thieman. Legler and Murray, Dayton attorneys, are counsel for the company. The company, representing a capitalization of $30,000, will be headed by Sam H. Davis, formerly of the Container Corporation of America, Cincinnati. Fleischaur will be the secretary.

It is expected that between 50 and 100 persons will be employed in the new plant at the start.

The outlook for the container trade is reported to be unusually bright.


THAT'S A LOT OF BULK
WHEN Hezro Davis says he has loaded more than a billion pounds of bulk soda ash in the years he has worked at Saltville, he is making no idle boast. He is simply stating a fact—a fact of which he is justly proud. Davis is proud of this record not just because it tells how well he has been doing his part to insure the safe arrival of bulk shipments of Mathieson Soda Ash. He is proud of what it tells about his company, too. For how could such volume be possible, Davis reasons, had not Mathieson been doing an outstanding job of producing good soda ash and giving good service to customers?
The MATHIESON ALKALI WORKS (Inc.), 60 East 42nd St., New York, N.Y.
Mathieson Chemicals
SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . . AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) SULPHUR CHLORIDE . . . CCH (INDUSTRIAL HYPOCHLORITE) . . . DRY ICE (CARBON DIOXIDE ICE)

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Specialties

Laminated Paper. Kurt Ripper. U. S. pat. 2,066,421 (Jan. 5, 1937).—A cellulosic sheet is impregnated with a solution prepared by mixing 1 mol. of thiourea with less than 2 mols. of formaldehyde in an aqueous medium having a pH of about 3, the mixing and impregnation being accomplished without addition of external heat and the amount of thiourea present being sufficient to prevent the formation of white insoluble formaldehyde-thiourea products. The impregnated material is dried without heating, and is then pressed and heated sufficiently to produce a resinous, water-repellent compound.—A.P.-C.

Safety Revenue. Postage and Like Stamps. Arthur A. Wittnebel, assignor to American Bank Note Co. U. S. pat. 2,064,281 (Dec. 15, 1936).—Stamps are printed on a sheet of paper having (on the face to which the printing is applied) a finishing coating containing coloring matter. The ink used for printing the design contains a water-insoluble pigment, water-soluble coloring matter and a bodied plate oil vehicle, all of such character and in such amounts that the stamp is protected from ordinary moisture and temporary wetting, but upon soaking, the water-soluble dye is dispersed over the stamp to stain it without destroying the design.—A.P.-C.

Safety Revenue, Postage and Like Stamp. Arthur A. Wittnebel, assignor to American Bank Note Co. U. S. pat. 2,063,071 (Dec. 8, 1936).—On the surface of the sheet other than the one receiving the adhesive there is applied a finish containing a size which becomes soft and absorbent when subjected to water, coloring matter and a suitable water-soluble chemical. The ink used to print the design contains a water-insoluble pigment and a water-soluble chemical capable of reacting with the one in the finish of the paper to produce a color smudge on the paper.—A.P.-C.

Negotiable Instrument Safety Paper. Opha Moore. U. S. pat. 2,065,605 (Dec. 29, 1936).—On the upper surface of a soft and relatively porous paper (suitably, 20-lb. basis India mail order bond), there is printed a geometrical pattern of intersecting, irregular, relatively spaced curved line in a colored fugitive ink. A screen or grill is printed in a differently colored indelible copying ink over certain portions of the paper.—A.P.-C.

Apparatus for Treating or Impregnating Paper. Allen D. Whipple and Cortland W. Davis, assignors to The Mantle Lamp Co. of America. U. S. pat. 2,065,636 (Dec. 29, 1936).—The invention includes a heated container for melting a polymerizable impregnating substance, means for passing the sheet into and out of the container, doctors for removing excess coating from both sides, and an oven in which the absorbed material is polymerized.—A.P.-C.

Manufacture of Impregnated Fibrous Base for Shoe Stiffener Parts or the Like. Frank O. Woodruff, assignor to Beckwith Manufacturing Co. U. S. pat. 2,063,649 (Dec. 8, 1936).—A fibrous base is impregnated with a liquefied mixture or rosin with a smaller amount of polyvinyl ester (acetate, chloride, chloro-acetate).—A.P.-C.

Toxic Agent and Its Application to Fibrous Products. George H. Ellis, assignor to The Insulite Co. U. S. pats. 2,067,046 and 2,067,047 (Jan. 5, 1937).—A mixture of 60 parts of "Reilly preservative No. 60", 20 parts of wood resin, 10 parts of flake caustic and 160 parts of water are cooked for about 45 mins. with dry steam, and cold water is added to obtain a 10 per cent emulsion. The material is sprayed on or otherwise incorporated with fibrous products at the rate of 2 to 30 lbs. per 1000 sq. ft. of ½-in. board, to obtain a product that is water resistant and resistant to molds and fungi. *No. 2,067,046* applies to the toxic agent and its use on fibrous material, and *No. 2,067,047* to the impregnated fibrous material.—A.P.-C.

Manufacture of Smooth-Faced Webs of Interfelted Fiber. Milton O. Schur, assignor to Brown Co. U. S. pat. 2, 064,360 (Dec. 15, 1936).—A smooth surface is imparted to a web of interfelted fibers, and more particularly to a binder-impregnated one, as it is being gradually dried from a wet state, by the application of smoothing pressure to the web in separate stages of increasing intensity as the wetness of the web decreases.—A.P.-C.

Material for Use As Leather Substitute and Process of Manufacture. Albert J. Hanley, assignor to Respro, Inc. U. S. pat. 2,065,892 (Dec. 29, 1936).—A woven fabric is impregnated with adhesive (preferably a naphtha solution of a rubber compound containing vulcanizing

material) loaded with fiber (preferably cotton 3/16 to ¾ in. long), subjected to suction, dried and pressed.—A. P.-C.

Manufacture of Coated Sheet and Web Material. Marbo Products Corp. Brit. pat. 455,641 (April 25, 1935).—Paper, cardboard or fiberboard is made resistant to water, grease, and gas by coating with a preparation containing rubber hydrochloride (20 to 24 per cent hydrochloric acid) and a suitable vehicle (resins, gums, waxes, chlorinated paraffin or diphenyl, coumarone, dammar, acetaldehyde-ethylenediamine, propl aldehyde-aniline).—A. P.-C.

Manufacture of Glossy Surfaces on Pliable Bases. G. Frenckel. Brit. pat. 454,769 (March 26, 1936).—A number of layers of plastic material are applied to a paper or textile base to form smooth conveyor bands, the layers being: (1) a solution of a resin free from oil and water, having a viscosity too high to prevent much penetration, (2), possibly the last layer, a cellulose derivative and the resin, (3) the cellulose derivative only. Agents for increasing the viscosity of the first layer are chlorinated rubber, cellulose esters, rubber, or metal salts.—A.P.-C.

Cigarette Paper. E. M. Roschmann. Brit. pat. 455,416 (Feb. 5, 1936).—Paper is impregnated with agar-agar to avoid a caustic taste and odor being noticeable on combustion.—A.P.-C.

Rolls for Feeding Paper Webs. The National Cash Register Co. Brit. pat. 452,373 (Aug. 20, 1936).—The rolls are manufactured by mixing with the main non-conducting constituent, e.g., rubber, a small amount, e.g., 3 per cent. of a conducting material such as graphite. The generation of static electricity during the feeding operation is prevented by such rolls.—A.P.-C.

Process for the Manufacture of Artificial Leather and Artificial Parchment. L. M. C. Champsaur. Blg. pat. 414,861 (May 30, 1936).—A parchmentizing agent is made to act on paper of such thickness that parchmentization occurs only through a portion of the thickness of the paper, and the latter is then split to give two sheets which are parchmentized only on one side.—A.P.-C.

Moisture Losses with Different Types of Butter Wrappers. A. H. White. Can. Dairy & Ice Cream J. 15, No. 8: 24-26 (1936).—Dry vegetable parchment wrappings gave a slightly greater loss of weight than cellophane with 1-lb. prints of butter stored for 15 days at 4°C. and 10°C. Wet parchment wrappings gave a smaller loss. Moisture loss is less with well-worked butter. No flavor is imparted to butter by these wrappings, but cellophane protects the butter from external flavors.—A.P.-C.

Vegetable Parchment. J. Melrose Arnot. World's Paper Trade Rev. 106: 1560, 1562 (Nov. 13, 1936).—Brief manufacturing hints.—A.P.-C.

Manufacture of Greaseproof Paper. Grove Mill Paper Co., Ltd., and D. McNeill. Brit. pat. 451,740 (Oct. 30, 1935).—From 1 to 10 per cent of titanium dioxide or zinc oxide pigment is incorporated in the paper, e.g., by adding it with or without dyestuff to the beater finish or on the wire.—A.P.-C.

Treatment of Tissue Paper. C. C. Hoffman and H. de Bourgogne. Brit. pat. 452,352 (Oct. 4, 1935).—For the manufacture of bed sheets, etc., tissue paper is treated with a solution of 1 volume of glycerine, 2 volumes of ethyl alcohol and 3 volumes of water, and with suspended talcum powder.—A.P.-C.

Electrical Insulating Material. Standard Telephones and Cables, Ltd., and J. K. Webb. Brit. pat. 454,823 (March 8, 1935).—Rolls of paper are impregnated with a plasticizer and monomeric styrene and are then polymerized by heating in a closed vessel; the rolls are unwound while soft and excess of polystyrene is removed by passing the material through a solvent, e.g., benzine. The product after being calendered can be wound and unwound.—A.P.-C.

Production of Artificial Leather. Deutsch Kunstleder-Werke Wolfgang G.m.b.H., and P. Simons. Brit. pat. 453,532 (March 14, 1935).—Artificial leather having an obliquely-threaded fiber base is made by lightly coating a straight-threaded fabric with a composition, cutting obliquely, and further treating as required, e.g., recoating, calendering and graining.—A.P.-C.

Manufacture of Cigarette Papers. Société Anonyme des Anciens Etablissements Braunstein Frères. Brit. pat. 453,634 (Feb. 2, 1936).—Not more than 2 per cent of stearic acid is incorporated in the paper by adding it to the slush pulp as an alkali salt or dissolved in aqueous borax solution. It is precipitated by addition of oxalic acid. About 2 per cent of titanium dioxide or other filler inert to oxalic acid is also embodied in the paper. All process water should be freed from calcium salts to prevent formation of calcium oxalate.—A.P.-C.

Imitation Leather or American Cloth. L. M. C. Champsaur. Brit. pat. 453,640 (Nov. 19, 1935).—Paper is parchmentized on one surface, which is then varnished. The reversed side of the paper may be used for cementing it to pasteboard.—A.P.-C.

Corrugated Paper or Board. Stein-Hall Manufacturing Co., Belg. pat. 415,530 (June 30, 1936).—The facing sheet is applied by means of an ungelatinized starch adhesive in a viscose hydrosol medium, which sets by gelatinization. Small quantities of caustic soda and sulphonated oil may be added to the adhesive.—A.P.-C.

Impregnated Fibrous Materials. British Titan Products Co., Ltd. Brit. pat. 450,733 (Aug. 31, 1935).—Fibrous material, such as paper, of low transparency and impermeable to liquids and gases is obtained by treatment with a suspension of a titanium pigment, such as titanium dioxide, in a mixture of the impregnating material (paraffins, waxes, etc.) and 0.05 to 0.5 per cent of a substance having an avid reaction (such as a higher fatty acid).—A.P.-C.

Safety Paper. The Todd Co., Inc. Belg. pat. 413,042 (Jan. 31, 1936).—A warning symbol is printed on the moist paper with a water-miscible ink which contains a substance that gives a colored reaction with chemical eradicators.—A.P.-C.

Process and Apparatus for Obtaining Creped Sheets Extensible in Various Directions. The Paper Service Co. Belg. pat. 413,536 (Feb. 29, 1936).—Crepings diagonal to the axis of a strip of paper are produced by means of a movable blade mounted above a creped surface to which the strip of paper is applied.—A.P.-C.

Production of Book-Binding Material Simulating the Appearance of Leather. E. Braeuer. Brit. pat. 451,152 July 26, 1935).—Paper or pasteboard, previously printed or otherwise treated to resemble leather is coated on one or both sides with viscose solution, passed through a coagulating bath, washed, and dried.—A.P.-C.

Material for Electrical Insulating Purposes. Callender's Cable and Construction Co., Ltd., and S. H. Cox. Brit. pat. 436,876 (April 9, 1935).—Fibrous sheet or tape (e.g., cotton, linen, or paper) is impregnated with a mixture of non-oxidizing pitch, 1 to 76 per cent of synthetic resin and not more than 20 per cent of castor oil.—A.P.-C.

Multi-Ply Product and Process for Its Manufacturing Harald Hestness. Mon. Papeterie Belge 16: 598-601 (Oct., 1936).—Several piles of paper, at least one of which is creped, are united by means of an elastic adhesive such as rubber, latex, gutta-percha, etc.—A.P.-C.

Heat and Power Production and Transmission*

Annual Progress Report of the Production and Transmission of Heat and Power Subcommittee of the Engineering Division of the Technical Association of the Pulp and Paper Industry

F. P. Wilmer[1]

In this, the fifth annual progress report, the outlines established in previous years is again followed.

The policy established last year of reporting in brief form only important installations or developments made during the year was adopted again in making this report.

A large number of the manufacturers approached relative to material for this report reported that they had made no outstanding developments or installations during the past year.

The committee desires to thank the contributing manufacturers. It is believed their cooperation will be of mutual advantage to themselves and the prospective users of their equipment.

I. Steam Generation

A. Coal Fired Plant

a. Coal Storage, Handling and Crushing.
Nothing submitted.

b. Pulverized Coal Preparation and Firing.
Nothing submitted.

c. Coal Burning.
The Hoffman Combustion Engineering Company has made an installation of Firite stokers at the United States Gypsum Paper Mills, Gypsum, Ohio, for a capacity of 50,000 pounds of steam per hour. This stoker is designed for burning ⅜ inch minus from any bituminous coal district in Ohio, selected for lowest combination of mine price and freight to give lowest B.T.U. cost.
Fig. 1 shows a Hoffman 3-Zoned Firite stoker similar to the above installation.

d. Ash Handling.
Nothing submitted.

B. Gas and Oil Fired Plant

a. Fuel Storage and Handling.
Nothing submitted.

b. Gas and Oil Burning.
Nothing submitted.

C. Wood and Other Refuse Fuels

a. Fuel Storage and Handling.

The Link Belt Company installed during 1936 for Weyerhaeuser Timber Company, Pulp Division at Everett, Wash., a complete system for the handling of hogged fuel for boiler house use.

Fuel is received by means of an overhead gantry crane and is unloaded from scows by means of clam shell buckets. Fuel is then discharged onto belt conveyors which convey the fuel to the boiler house and fuel storage bin, weigh-to-meters being installed in the conveyor lines so that the amount of fuel can be determined that is unloaded from the scow as well as the amount of fuel that is produced by the saw mill and refuse from the pulp mill. Excess fuel over that required by boilers is carried to storage and recirculated as required.

In the boiler house special chutes are provided with swinging doors of such construction that the inlet of air to the boilers above the Dutch oven openings is reduced to a minimum when fuel is not being supplied to the boilers.

The capacity of the system is 8,000 cubic feet per hour of wood waste.

Fig. 2 shows the general arrangement of the system.

Drag Chain Conveyors for Handling Blocks

The Stephens-Adamson Mfg. Company have installed the conveyors for handling wood and refuse to the boilers at the new mill of the Union Bag and Paper Company at Savannah, Ga. A description of all wood handling and refuse conveyors follows.

Two portable yard conveyors, and conveyors Nos. 1 to 5 inclusive, are arranged to handle logs and blocks from storage yard and from barges to barking drums in the wood preparation room. These each have a capacity of approximately 30 cords per hour and are built with a single drag chain to carry logs along a deep trough as shown, at a speed of about 125 feet per minute.

Two Portable Yard Conveyors—each 74 ft. 6 in. long, to collect from cars and storage piles and deliver to yard conveyors Nos. 1 and No. 2 (operating at right angles).

Yard Conveyor No. 1—horizontal conveyor 409 ft. 0 in. long, receives from cars and from one portable conveyor to discharge into transfer conveyor No. 2.

Transfer Conveyor No. 2—inclined to conveyor 100 ft. 0 in. long, receives from yard conveyor No. 1 and delivers to conveyor No. 4 (at right angles).

Yard Conveyor No. 3—horizontal conveyor 400 ft. 0 in. long and similar to yard conveyor No. 1, receives from cars and from one portable conveyor and delivers (with transfer conveyor No. 2) to conveyor No. 4.

Conveyor No. 4—inclined conveyor 164 ft. 0 in. long and with 38 ft. 0 in. rise, carrying logs and blocks from conveyors No. 2 and No. 3 up to barking drums.

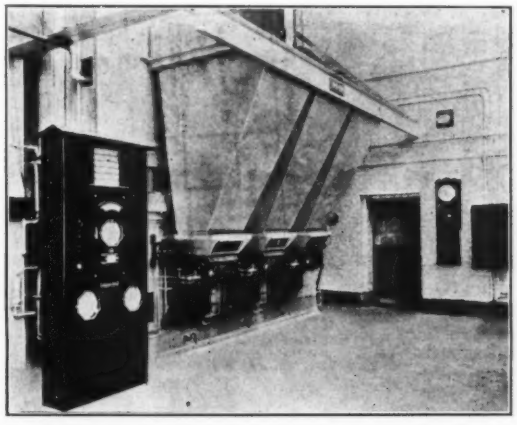
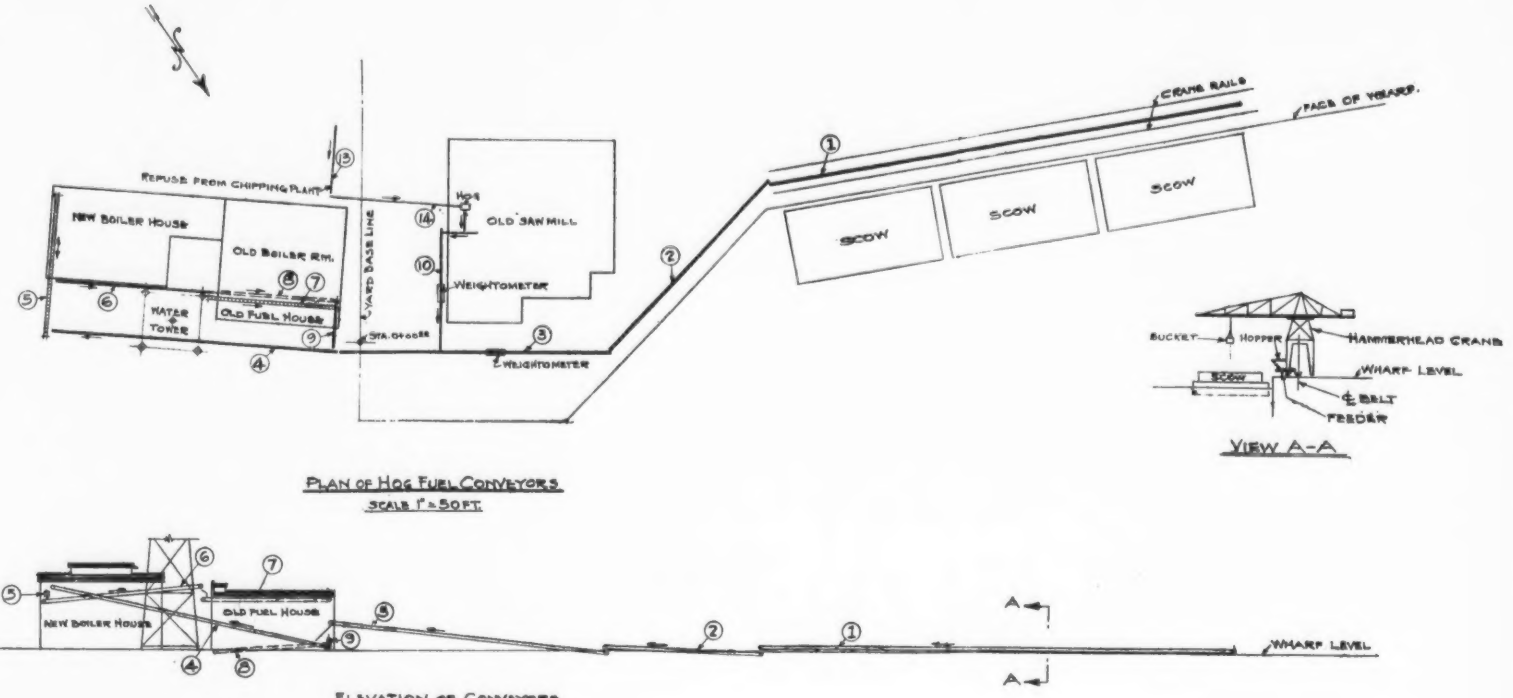


Fig. 1.
Hoffman Firite stokers—3-zoned installation. (Hoffman Combustion Engineering Co.).

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 22-25, 1937.

[1] Chief Engineer, Albemarle Paper Manufacturing Company, Richmond, Va.



LEGEND	No.	DESCRIPTION
———	1	24" BELT CONVEYOR
———	2	✓ ✓ ✓
———	3	✓ ✓ ✓
———	4	30° ✓ ✓
⊓⊓⊓	5	✓ FLIGHT ✓
———	6	✓ BELT ✓
⊓⊓⊓	7	✓ FLIGHT ✓
====	8	DOUBLE STRAND CHAIN CONVEYOR
———	9	30" BELT CONVEYOR
———	10	24" BELT CONVEYOR
———	13	24" BELT CONVEYOR
———	14	24" BELT CONVEYOR

HOGGED FUEL CONVEYING SYSTEM
FOR
WEYERHAEUSER TIMBER CO.
EVERETT, WASH.
LINK-BELT COMPANY
PACIFIC DIVISION
SEATTLE, WASH.

FIG. 2.
Hogged fuel conveying system. (Link-Belt Co., Pacific Div.).

The following conveyor is similar to conveyor from storage yard, consisting of a single strand of drag chain operating in a continuous trough.

Conveyor No. 5—horizontal and inclined conveyor 300 ft. 0 in. long and with 36 ft. 0 in. rise, carries logs and blocks from barges on water front, delivering to the same barking drums that are fed by conveyor No. 4.

Drag Chain Conveyors for Handling Barked Blocks and Refuse

Conveyors Nos. 6 to 9 inclusive handle blocks, logs and refuse from barking drums to wood room for chipping and screening.

Refuse Conveyors Nos. 6 and 7—horizontal conveyors 58 ft. 0 in. long, made of 2 strands of chain with a flight between to carry refuse, bark, etc., from the barking drums to cross conveyor No. 8.

Refuse Conveyor No. 8—inclined conveyor 104 ft. 0 in. long, similar to conveyors No. 6 and No. 7, with 11 ft. 0 in. rise, carrying refuse from conveyors No. 6 and No. 7 to wood room where it discharges to 24 inch refuse belt conveyor No. 14 (below 30 in. belt conveyor for chips).

Block Conveyor No. 9—inclined conveyor 84 ft. 0 in. long with 13 ft. 0 in. rise, built with 1 strand of drag chain to carry logs and blocks from barking drum to wood room in a continuous trough, discharges to chipper.

Belt Conveyors and Bucket Elevators

A series of 24 inch and 30 inch S-A belt conveyors carry chips, sawdust and refuse through the wood room, over vibrating screens and up to the digester house, where the chips are distributed to the various digesters and refuse is stored in bins in boiler house. The chips average 25 pounds per cubic foot and are handled at approximately 30-35 cords per hour. The belt conveyors are equipped with S-A Truss-Frame ball bearing carriers. S-A furnished belt conveyors, bucket elevator, spouts and steel frame work for conveyors.

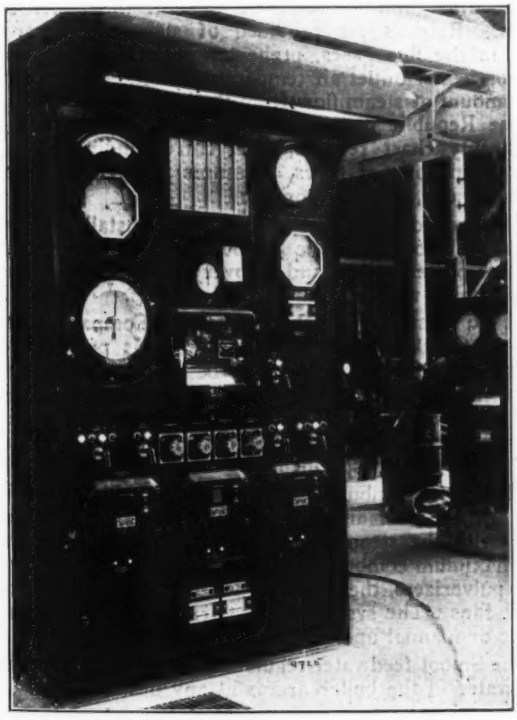


Fig. 3.
Leeds & Northrup combustion Control Panel. (Leeds & Northrup Co.).

Belt Conveyor No. 10 for Chips—30 inches wide by 21 ft. 0 in. long, carries chips and dust from chippers in wood room up a slight incline to the S-A bucket elevator.

Bucket Elevator No. 11—33 ft. 0 in. high, elevates chips from belt conveyor No. 10 to 2 vibrating screens. Elevator consists of 28 by 10 by 10 inch steel buckets bolted to belt.

Two Vibrating Screens—separate sawdust and refuse from chips.

Belt Conveyor No. 12 for Chips—30 inches wide by 480 ft. 0 in. long, carries chips from wood room up an incline to conveyor No. 13 in digester house.

Flat Belt Conveyor No. 13 for Chips—30 inches wide by 80 ft. 0 in. long, operates horizontally at right angles to conveyor No. 12 to discharge chips into a long steel storage bin located over the digesters. The load is discharged by means of a hand propelled plow which can be moved to any point to scrape the load from the conveyor belt.

Belt Conveyor No. 14 for Refuse—24 inches wide by 394 ft. 0 in., carries refuse at approximately 8 cords per hour from refuse drag conveyor No. 8 and vibrating screens up an incline to boiler house. Operates in same gallery and below belt conveyor No. 12. Discharges to belt conveyor No. 15 on floor 42 feet below.

Belt Conveyor No. 15 for Refuse—24 inches wide by 75 ft. 0 in. long, horizontal belt carries refuse and sawdust to flat belt conveyor No. 16.

Flat Belt Conveyor No. 16 for Refuse—24 inches wide by 31 ft. 6 in. long, which delivers refuse to 2 storage bins in boiler house. Belt is operated flat, without carrier and a hinged plow can be adjusted to discharge refuse bin or to be swung out of position to allow refuse to continue and discharge over head end into second bin.

b. Fuel Burning.

Nothing submitted.

D. Combustion and Boiler Control

The Leeds and Northrup Company have recently made an installation of their Metermax combustion control at the Laclede Power and Light Company, Mound Street Station, St. Louis, Missouri. This installation is a unit combustion control system which continuously meters steam pressure, fuel, feed, air supply and furnace pressure, and holds these factors to predetermined standards or relations. Fig. No. 3 shows this control panel.

The Republic Flow Meters Company has made a great number of important combustion control installations in the paper industry during the past year.

At the Auglaize Boxboard Company, St. Marys, Ohio, the new 100,000 pounds per hour pulverized coal fired boiler is equipped with Republic instruments and Smoot automatic combustion control.

The Smoot combustion control system automatically regulates the fuel and air input to the boiler, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the two coal pulverizers, the induced draft fan and the stack damper, and the forced draft fan and the damper in the second-

ary air duct. The system is arranged for either automatic or manual operation.

The Republic instruments indicate the pulverizer differentials, primary air flows, furnace pressure, windbox pressures and boiler draft, as well as steam pressure, and feedwater pressure. Records are provided of steam flow, pressure and temperature, water level, CO_2 and the temperatures of the flue gas, air flow from heater and the air and coal mixture leaving each pulverizer.

At the Gardner-Richardson Company, Lockland, Ohio, the new 150,000 pounds per hour, stoker fired boiler is equipped with Republic instruments and Smoot automatic combustion control.

The Smoot combustion control system automatically regulates the fuel and air input to the boiler, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the stoker speed, the induced draft fan and the forced draft fan. The system is arranged for either automatic or manual operation.

The Republic instruments include records of steam flow, CO_2, temperatures, steam pressure and furnace draft as well as indicators showing steam pressure and furnace draft as well as indicators showing steam pressure, feedwater pressure, steam flow, CO_2 and a multiple indicator showing the pressure of: draft after preheater, draft after economizer, last pass, furnace and forced draft zones one, two and three.

At the Newton Falls Paper Company, Newton Falls, N. Y., the new 55,000 pounds per hour, pulverized coal fired boiler is equipped with Republic instruments and Smoot automatic combustion control.

The Smoot combustion control system automatically regulates the fuel and air input to the boiler, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the coal pulverizer, the damper in the induced draft fan duct and the damper in the forced draft fan duct. The system is arranged for either automatic or manual operation.

The Republic instruments include indications of the mill differential, primary air differential, secondary air pressure, furnace draft, uptake draft, air heater draft, steam pressure and steam pressure in the feedwater heater as well as a recording, indicating and integrating feedwater flow meter.

At the Prairie State Paper Mills, Joliet, Ill., the new 55,000 pounds per hour, pulverized fuel fired boiler is equipped with Republic instruments and Smoot automatic combustion control.

The Smoot combustion control system automatically regulates the fuel and air input to the boiler, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the coal pulverizer, the uptake damper and the damper in the forced air draft fan duct.

The Republic instruments include a multiple indicator which shows the stack draft, the heater outlet draft, the boiler outlet draft, the furnace range, the burner pressure and the air draft to the pulverizer. There are also recorders showing steam flow, CO_2, various temperatures and pressures and a steam pressure indicator.

At the Southern Kraft Corporation, Georgetown, South Carolina, the two new 125,000 pounds per hour oil fired boilers are to be equipped with Smoot automatic combustion control. The bark-fired boiler is equipped with Smoot remote hand control. Fourteen Republic flow meters have already been specified for this installation.

The Smoot combustion control system will automatically regulate the fuel and air input to the boilers, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the fuel oil, the air flow and the furnace draft. The system is arranged for either automatic or manual operation.

The Smoot remote hand control for the bark-fired boiler is arranged to operate the induced draft fan so as to maintain the correct amount of air for efficient combustion.

At the Union Bag and Paper Corporation, Savannah, Ga., equipment has been installed as follows. The first unit of this installation included three new 50,000 pounds hour, oil fired, power boilers which were equipped with Republic boiler instruments and complete Smoot automatic combustion control and three new, waste wood fired, recovery boilers which were equipped with Smoot combustion control. Republic distribution instruments and Smoot pressure reducing and desuperheating equipment were also installed.

The Smoot combustion control system automatically regulates the fuel and air input to the boilers, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the fuel oil flow to the boilers, the dampers regulating the discharge of the induced draft fans and the dampers regulating the discharge of the forced draft fans. The system is arranged for either automatic or manual operation and is designed so that the total plant load may be divided among the boilers in any way desired, both on automatic or manual control.

The Smoot control on the recovery boilers may be set for the burning of oil when there is an insufficient amount of waste wood for fuel. The system operates to maintain the proper amount of air necessary for efficient combustion of the waste wood or oil fuel in these boilers, which are used as auxiliaries to the power boilers.

The Republic boiler instruments include indications of rate of steam flow, preheater inlet air pressure, preheater outlet air pressure, furnace draft, uptake draft, preheater outlet draft and per cent of CO_2 in the boiler outlet gases. Records are provided of steam flow, per cent CO_2 in the flue gases, preheater outlet gas temperature and preheater outlet air temperatures. Integrators totalize the amount of steam flow from the boilers.

The Republic distribution instruments provide a total of twenty chart records, with corresponding indicators and integrators, of flows, pressures and temperatures of steam, water, black liquor, etc.

The second and third units of this installation are to include Smoot automatic combustion control for the additional power boilers and recovery boilers as well as Republic boiler and distribution instruments.

At the West Virginia Pulp and Paper Company, Charleston, S. C., the two new 300,000 pounds per hour, pulverized coal fired boilers are to be equipped with Republic instruments and Smoot automatic combustion control. The bark fired boiler is to be equipped with a Smoot furnace draft regulator. Smoot feedwater regulating equipment is also specified.

The Smoot combustion control system will automatically regulate the fuel and air input to the boiler, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the two coal pulverizers, the boiler outlet dampers and the forced draft fans. The system will be arranged for either automatic or manual operation.

The Smoot feedwater regulation will operate to maintain the water in the boiler drums at any desired level.

The Republic instruments include recorders for steam and black liquor flows, pressures and temperatures. Multiple indicators will show the draft or pressures in the

furnace, behind the superheater, at the air heater exit, at the induced draft fan inlet, of the secondary air at the burner, at the air heater entrance, etc.

At the West Virginia Pulp and Paper Company, Williamsburg, Pa., the two new 100,000 pounds per hour, pulverized coal fired boilers are equipped with Republic instruments, Smoot automatic combustion control and Smoot feedwater regulation. Also included in this installation is Smoot pressure reducing and desuperheating equipment.

The Smoot combustion control system automatically regulates the fuel and air input to the boilers, in accordance with the steam demand and in correct proportions for maximum combustion efficiency, by controlling the pulverizers, the boiler outlet dampers and the forced draft fans. The system is arranged for either automatic or manual operation.

The Smoot feedwater regulation operates to maintain the water in the boiler drums at any desired level.

The Republic instruments include records of steam flow, CO_2, feedwater flow, boiler water level and various pressures and temperatures. Integrators totalize the steam and water flows. Multiple indicators show drafts or pressures of the induced draft fan, the draft at the exit of the air preheater, at the boiler exit, in the furnace, in the burner box, at the forced draft fan discharge, and the per cent of CO_2 in the flue gases.

E. Steam Boilers, Generators and Superheaters.

a. Boilers, Generators and Superheaters.

During the year 1936 The Babcock & Wilcox Company placed in operation or had on order a total of 35 B. & W.-Tomlinson process units for the recovery of chemicals and heat from black liquor, in 17 pulp and paper mills in the United States. Of the 17 plants, twelve are in the south, three in the northwest and two in the New England states.

One of the important installations will be at the Southern Kraft Corporation, Georgetown, S. C. There will be installed at this mill five B. & W.-Tomlinson Recovery Process Units including B. & W. three drum waste-heat-type boilers, B. & W. return-bend economizers, B. & W. tubular air heaters, B. & W. superheaters, B. & W. black liquor furnaces, black liquor burners, induced and forced-draft fans, Bailey meter control equipment, mixing tanks, black liquor and salt cake black liquor pumps. For each unit the boiler heating surface is 9672 square feet, the maximum steam capacity when handling 27,000 pounds of black liquor concentrated to 55 per cent solids is 55,700 pounds per hour. The design pressure is 450 pounds per square inch and the total steam temperature at maximum capacity 660 degrees Fahrenheit.

It is claimed that the three drum waste-heat boiler is

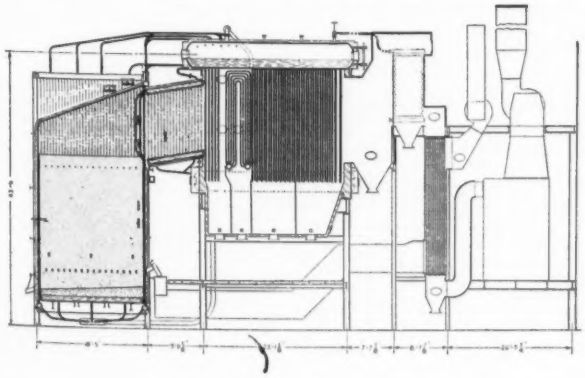


Fig. 4.
B. & W. 3-drum boiler for black liquor recovery. Southern Kraft Corp. (Babcock & Wilcox Co.).

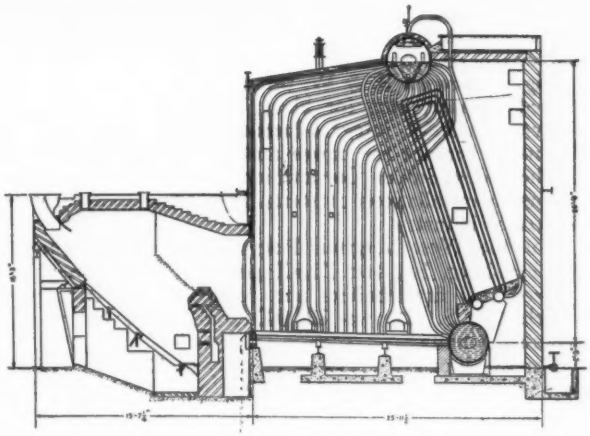


Fig. 5.
B. & W. integral-furnaced boiler with Hofft extention furnace. Southern Kraft Corp. (Babcock & Wilcox Co.).

particularly adapted to the black liquor recovery process because of the arrangement of staggered tubes in vertical tube banks without baffles, which not only insures maximum heat extraction from the gases in their horizontal, one-way flow through the boiler, but also permits the free fall of solid deposits from the tubes into the dust hoppers below the boiler. Provision is made for complete accessibility for cleaning the tube surfaces while the unit is in operation.

The heating surfaces of the furnace, boiler, economizer, and air heater are so proportioned as to provide the most economical arrangement for maximum heat absorption. The virtual elimination of brickwork in the entire unit insures the minimum of maintenance and outage. The completeness of the Bailey control and metering equipment is further assurance of uniformly efficient operation.

The furnace in each unit is entirely water-cooled by Bailey stud-tube walls, fully studded construction being employed in the lower section, and partially studded construction in the upper section. The flue through which the gases pass to the boiler is also completely water cooled, with partially-studded construction.

The Babcock & Wilcox Company reports that of the boilers furnished by them for power and process steam in the pulp and paper industry during the past year, the installation at the Southern Kraft Corporation, Georgetown, S. C., is outstanding in its type. This installation includes three B. & W. integral-furnace boiler units, including one integral furnace boiler with M. A. Hofft Company extension furnace to burn bark or oil or both fuels in combination and two integral-furnace boilers to burn oil fuel. The boiler units are equipped with B. & W. Superheaters, B. & W. San Diego type mechanical atomizing oil burners, for burning bark and oil, B. & W. combination oil and pulverized-coal burners, for boilers burning oil fuel. The boiler heating surface is 13,770 square feet. The maximum steam capacity of the unit burning bark and oil is 120,000 pounds per hour and with bark fuel only 60,000 pounds per hour. The maximum steam capacity of the units burning fuel oil is 120,000 pounds per hour. The design pressure is 450 pounds per square inch and the operating pressure 430 pounds per square inch. The total steam temperature on the unit burning bark and oil, with bark only at 60,000 pound capacity is 660 degrees Fahrenheit and with bark and oil in combination at 120,000 pounds capacity 676 degrees Fahrenheit. The total steam temperature on the units burning oil fuel only at 120,000 pounds capacity is 676 degrees Fahrenheit.

The installation of combination oil and pulverized-coal burners on the two units burning oil will permit of future pulverized coal burning.

Fig. 4 shows a B. & W. three drum boiler with water cooled furnace, etc., for black liquor recovery. Fig. 5 shows a B. & W. integral-furnace boiler unit with Hofft extension furnace for power and process steam.

The Riley Stoker Corporation has recently made the following installations of steam generating equipment for the paper industry.

For the West Virginia Pulp and Paper Company at Williamsburg, Pa., two 71,500 pounds per hour new pulverized coal fired boilers and for this same concern at Charleston, S. C., two 225,000 pounds per hour steam generating units.

For the Escanaba Paper Company at Escanaba, Mich., one 90,000 pounds per hour new pulverized coal fired boiler.

For the Imperial Paper and Color Corporation at Glens Falls, N. Y., two 50,000 pounds per hour stoker fired boilers.

b. Blowdown.

The Henszey De-Concentrator Company has recently made six installations of their continuous blow down systems in boiler plants ranging from 500 to 2,500 h.p.

The outstanding features of the Henszey continuous blow down system are first, the amount of blow down necessary is predetermined and through automatic control is maintained at this predetermined ratio, no matter what the steaming rate of the boilers may be. Second, it is claimed that the design of the heat exchangers used is such that the greatest transfer of heat possible is obtained based upon the design for proper velocity of both the cooling water as well as the blow down from the boiler. It is also claimed that this design tends to decrease the scale formation in the heat exchanger and leads to long life of the tube bundles.

F. Economizers

Nothing submitted.

G. Air Heaters

Nothing submitted.

H. Boiler Feed

a. Water Treatment.
Nothing submitted.

b. Heating and Deaerating.
Nothing submitted.

c. Pumping.
Nothing submitted.

I. Metering

A new all-electric CO_2 recorder installation was made this past year at the Lynn Gas & Electric Company, Lynn, Mass., by the Leeds and Northrup Company. It is claimed that this recorder eliminates previous difficulties by measuring a continuous sample of flue gas which instead of being dried, is saturated with water vapor.

At the Champion Paper and Fibre Company, Houston Division, Pasadena, Texas, Republic instruments installed on three 40,000 pounds per hour recovery boilers and one 70,000 pounds per hour bark burning boiler include flow meters for steam, water, air and black liquor. There are also Republic temperature recorders and multiple indicators showing drafts, pressures, etc., for the boilers.

J. Control

a. Feed Water Regulation.
Nothing submitted.

b. Pressure Regulation.
Nothing submitted.

c. Boiler Water Level Regulators.
Nothing submitted.

d. De-superheater Control.

The Republic Flow Meters Company has made an installation at the West Virginia Pulp and Paper Company, Williamsburg, Pa. The Smoot pressure reducing valve is capable of passing a maximum steam flow of 75,000 pounds per hour and operates in parallel with a hand operated globe valve of the same capacity. The Smoot de-superheater is capable of passing the combined output of the reducing valve and the globe valve, or 150,000 pounds per hour. The pressure reducing valve and de-superheater operate to pass steam from the 550 pound header, at a pressure of 550 pounds and a temperature of 750 degrees Fahrenheit to the 150 pound header, at any desired pressure and temperature.

The Smoot pressure reducing and de-superheating system, installed at the plant of the Union Bag and Paper Corporation at Savannah, Ga., includes a Smoot turbine type, lever operated, reducing valve capable of handling a maximum steam flow of 50,000 pounds per hour, which by-passes steam from the 425 pound header, reducing it to 125 pounds pressure; a Smoot venturi type de-superheater capable of handling a maximum flow of 50,000 pounds per hour at 125 pounds pressure and reducing the temperature from 750 degrees Fahrenheit to 10 to 15 degrees superheat; and a Smoot turbine type, lever operated, reducing valve which passes a maximum steam flow of 30,000 pounds per hour, reducing it from 125 to 30 pounds pressure.

e. General Automatic Control.
Nothing submitted.

f. Automatic Frequency and Load Control.

At the Valmont Station of the Public Service of Colorado, Boulder, Col., the Leeds and Northrup Company have installed this past year a flat frequency control. This is one of the most recent applications of frequency control on an isolated power system which is interested in maintaining constancy of frequency supplied to customers.

g. Fuel Gas Control.
Nothing submitted.

II. Steam Distribution

A. Piping Valves and Fittings

The Midwest Piping and Supply Company, Inc., of St. Louis, Mo., have developed a new joint known as the "Globack Joint." It is called Globack because the back face of the lap is a segment of a globe or sphere. The flange bearing surface is also spherically machined. It is claimed that Globack joints are improvements on the conventional Van Stone joints for 600, 900 and 1350 pounds w.s.p. particularly when the tongue and groove or male and female applications are considered. There has also been developed a Globack modification of the Sarlun joint for high temperature and pressure applications.

The Yarnall-Waring Company has developed a new type of steam trap known as the Yarway impulse steam trap. In this trap a unique principle is employed to operate the valve, which is the only moving part. This principle is based on the fact that when a fluid flows through two orifices in series with a closed chamber between the orifices a change in the characteristic of the fluid may cause a change in pressure in the closed chamber. In the Yarway impulse trap a tiny portion of the condensate, called the "control flow," is by-passed around the main valve

seat, flowing through an annular orifice, a closed chamber, and a circular orifice located between inlet and outlet sides of the trap. Changes in the temperature of the condensate cause changes in the pressure in the closed space which is called the control chamber; these changes in pressure open or close the valve to start or stop main discharge through seat. When handling low or medium temperature condensate the control flow reduces the intermediate pressure in control chamber and valve is lifted by the inlet pressure. As condensate approaches steam temperature some of the control flow flashes into vapor at second orifice and the resulting increase in volume causes a choking of the flow at this point, which in turn increases the pressure in control chamber to a point high enough to close the valve.

The Yarway impulse trap is made entirely of bar stock, is very small in size, light in weight and easy to install. These traps are factory set to operate at all pressures up to 400 pounds without change of internal parts.

B. ACCUMULATORS

Nothing submitted.

C. HEAT EXCHANGERS

Nothing submitted.

III. Steam Power

A. TURBINES

a. Paper Machine Drive.

The General Electric Company has made during the past year four installations of electric governors for mechanical drive turbines on paper machines. Two of these were installed on 110 h.p. turbines; one on a 350 h.p. turbine and one on a 400 h.p. turbine.

b. Miscellaneous Mechanical Drives.

Nothing submitted.

c. Generator Drive.

Nothing submitted.

B. STEAM ENGINES

Nothing submitted.

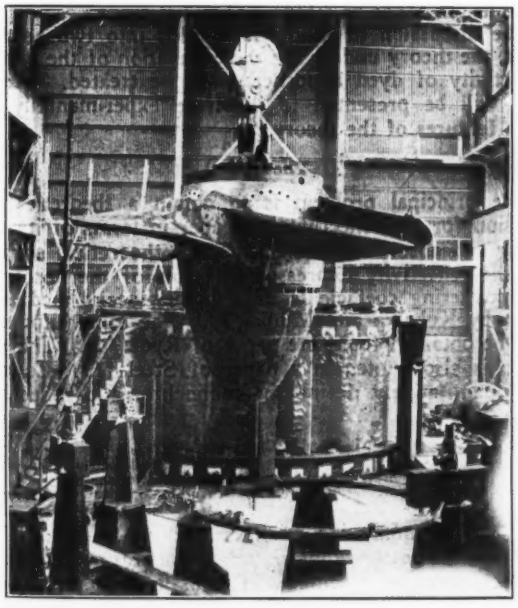


FIG. 6.
Kaplan runner for Bonneville Power-Navigation project. (S. Morgan Smith Co.)

FIG. 7.
Solid Cast chrome steel runner for 1580 feet head impulse turbine. (S. Morgan Smith Co.).

C. CONDENSERS AND AUXILIARIES

Nothing submitted.

IV. Hydraulic Power

A. DAMS, FOREBAYS, RESERVOIRS, ETC.

Nothing submitted.

B. PENSTOCKS, GATES, VALVES, MECHANICAL RACKS

Nothing submitted.

C. TURBINES, WATERWHEELS, GOVERNORS

The S. Morgan Smith Company has made a number of important installations of hydraulic turbines during the past year.

For the Bonneville Power-Navigation project they installed 66,000 h.p. turbines, 75 r.p.m., for 30-65 feet head. These turbines are automatic Kaplan units, 5 blades, one set of blades machine finished, one set ground smooth. These are the largest capacity Kaplan turbines installed in the world. Pressure is automatically maintained on the oil in the runner hub and special devices are provided for testing the runner hub for accumulated water. Fig. 6 shows the Kaplan runner for one of these units.

For the Porto Rico Reconstruction Administration, Toro Negro Div. in Plant No. 1 a 6,600 h.p. turbine, 600 r.p.m., 1,580 feet head; in Plant No. 2 a 2,700 h.p. turbine, 300 r.p.m., 630 feet head. For the 6,600 h.p., 1,580 feet head turbine which is of the impulse type a solid cast chrome steel runner was furnished. Fig. 7 shows this runner.

For the Great Lakes Power Company, Montreal River Bridge Development a 9,750 h.p. turbine, 277 r.p.m., 186 feet head.

Another installation was for the Public Electric Light Company, Clark Falls Development consisting of a 4,000 h.p. turbine, 240 r.p.m., 41 feet head.

D. RESEARCH AND LABORATORY WORKS

Nothing submitted.

V. Oil Engines

Nothing submitted.

VI. Generation of Electricity

A. GENERATORS AND EXCITERS

Nothing submitted.

VII. Distribution of Electricity

A. SWITCHGEAR

Nothing submitted.

B. OVERHEAD, UNDERGROUND AND INTERIOR DISTRIBUTION

Nothing submitted.

C. TRANSFORMERS, CONVERTERS, ETC.

Nothing submitted.

VIII. Plan and Design of Power Plant and Distribution Systems

Nothing submitted.

The Calculation of the Spectral Reflectivity of Dyed Handsheets*

By Philip Nolan[1]

Summary and Abstract

The theoretical equation of Kubelka and Munk for the reflectivity of a medium in terms of its absorption and scattering coefficients is applied to the problem of calculating the spectral reflectivity of handsheets which contain two or more dyes, from the spectral reflectivities of handsheets containing the individual dyes. The assumptions which are made in order to arrive at the results are definitely stated. The theoretical conditions for the experimental observation of the difference between the spcetral absorption coefficients of a dye in water solution and that adsorbed on the fiber are set forth. A procedure for determining the spectral reflectivity of a handsheet which contains two dyes is outlined. Good agreement was obtained between experimental and theoretical spectral reflectivities of handsheets of unbleached sulphite dyed with mixtures of two basic dyes. Experimental curves are presented to show the difference between the spectral absorption coefficients of methylene blue dye when it is in water solution and when it is adsorbed on unbleached sulphite fiber.

The purpose of the present paper is to apply the theory developed by Kubelka and Munk *(1)* to the problem of the calculation of the spectral reflectivity of handsheets which contain one or more dyes.

This work was undertaken with the hope of predicting the color of a dyed sheet of paper from the spectral absorption characteristics of the individual components of the sheet. The problem may be more directly stated in the question: Is it possible to calculate the spectral reflectivity curve of a sheet of paper if the scattering and absorption properties are known for the undyed stock and for the several dyes which may be used? If so, what are the minimum data necessary for such a calculation? What are the limitations of the method? The same problem may be put more practically. The spectral reflectivity curve of a dyed sheet is to be reproduced by laboratory means. After several trials are made, it is found that the spectral reflectivity curve of the experimental sheet approximates that of the sample. The following questions now arise: What change in dye concentration must be made in the experimental sheet in order to obtain a closer approximation of its spectral reflectivity curve to that of the sample? Can a satisfactory spectrophotometric match be obtained by the use of the available stock and dyes? It must be emphasized that the discussion to follow is limited to the dyeing of handsheets.

The color of an opaque pad of paper may be specified on the standard ICI system of color specification when the following factors are known: spectral energy distribution of the source of light, the geometry of illuminating and viewing conditions, and the spectral reflectivity of the paper. We then limit the problem to the calculation of the characteristic of the sheet itself which is responsible for its color, that is to say, the spectral reflectivity curve. The colors of two sheets will match for all observers under all illuminations when their spectral reflectivity curves are identical. The spectral reflectivity of a sheet is defined as the spectral reflectance of an opaque pad (approximation to a homogeneous medium of infinite extent). When the spectral reflectivity is mentioned hereafter, it is assumed that the curve representing the reflectivity of the sheet as a function of the wave length is known for the wave length range of 400 to 700 millimicrons.

The discussion to follow is divided into two sections. First, the theory underlying the calculation of the spectral reflectivity of dyed handsheets will be treated. Second, data will be presented to illustrate experimentally, the main features of the theory.

Theoretical

The principal problem is to obtain a theoretical expression for the reflectivity of paper in terms of its scattering and absorption coefficients. A theoretical equation for the reflectivity expressed in terms of the absorption and scattering coefficients of a homogeneous medium is given by Kubelka and Munk *(1)*. The same expression may be obtained from the paper of Ryde *(2)*. The relation is also quoted in a paper of Steele *(3)*. Equation (1) quantitatively define the monochromatic reflectivity, R_∞: (1)

$$R_\infty = 1 + (k/s) - [(k/s)^2 + 2(k/s)]^{1/2},$$

where k = absorption coefficient or the fraction of the incident energy lost by absorption per unit thickness of material,
and s = scattering coefficient or fraction of the incident energy lost due to scattering per unit thickness of material.

All of the equations to follow will be understood to hold for monochromatic light of some arbitrary wave length unless otherwise specified. The assumptions which are made in the derivation of equation (1) are:

1. The medium is homogenous and sufficiently thick to be opaque.

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* Presented by title at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., February 22-25, 1937.

[1] Research Assistant, The Institute of Paper Chemistry, Appleton, Wisconsin.

2. Reflectance is determined for completely diffuse illumination.

The result of solving equation (1) for the ratio of *(k/s)* is given in equation (2):

$$(k/s) = (1 - R_\infty)^2/2R_\infty. \quad (2)$$

It is seen from equation (2) that only the ratio of *(k/s)* may be determined from the single measurement of R_∞. In order to determine either the absorption coefficient k or the scattering coefficient s, in addition to their ratio, it is necessary to use the equations of Kubelka and Munk *(1)* which express the reflectance of a thickness, X, of the paper as a function of R_∞ sX, and the reflectance of its background.

A Medium Containing Several Components

Theoretical relations have been derived by Rupert *(4)* for the purpose of calculating the reflectance of surfaces which contain mixtures of dyes or pigments. An empirical procedure is described by Appel *(5)*. The present work is based upon the application of equations (1) and (2). In order to apply equation (1) to the case of a medium containing several components, it is necessary to express the total absorption coefficient, k_{total}, in terms of the absorption coefficients of the individual components; similarly, the total scattering coefficient must be expressed in terms of the scattering coefficients of the individual components. To facilitate reference to the individual components, subscripts will hereafter be use for the R_∞, k, and s values. The components are labelled in the following manner: component 1, pulp; component 2, first dye; component 3, second dye; etc. Equation (1) becomes equation (3) for the case of a pulp dyed with two dyes when the above nomenclature is used:

$$(R_\infty)_{1,2,3} = 1 + (k/s)_{1,2,3} - [(k/s)^2_{1,2,3} + 2(k/s)_{1,2,3}]^{1/2}. \quad (3)$$

Let us first consider the case of a pulp dyed with a single dye. The subscripts are then 1,2. $(k/s)_{1,2}$ may be calculated from equation (2) and the measured value of $R_{\infty 1,2}$, or inversely, $R_{\infty 1,2}$ may be calculated if $(k/s)_{1,2}$ is known. $(k/s)_{1,2}$ is expressed in terms of the absorption and scattering coefficients of the pulp and of the dye in equation (44):

$$(k/s)_{1,2} = (k_1 + k_2)/(s_1 + s_2). \quad (4)$$

The assumption which underlies the validity of equation (4) is that the pulp furnish and the dye absorb and scatter light independently of each other. If the absorption coefficient of the dye in the mixture is directly proportional to its concentration adsorbed by the pulp, then $(k)_2$ is given by the product of its concentration in the mixture, c'_2, the absorption coefficient per unit concentration, $(k')_2$. Equation (5) expresses the proportionality between the initial concentration of the dye solution and the concentration of the dye adsorbed by the pulp:

$$c'_2 = ar_2c_2, \quad (5)$$

where r_2 is the retention or the fraction of the total weight of dye added to the pulp which is retained;
a is the constant of proportionality which expresses the concentration of the dye retained in proper units;
c_2 is the initial concentration of dye solution.

It is now assumed that the scattering coefficient of the dye, s_2, is small compared with the scattering coefficient of the pulp, and can therefore be neglected. It is also assumed that the scattering coefficient of the pulp, has not been changed upon the addition of the dye. By making use of these assumptions, in addition to equation (5) and the definition of k'_2, equation (4) may be rewritten as equation (6):

$$(k/s)_{1,2} = (k_1 + arc_2k'_2)/s_1. \quad (6)$$

Equation (6) illustrates the linear relation existing between the measured *(k/s)* of the mixture and the concentration of the dye retained by the sheet. In general, the retention, r_2, will be a function of c_2. Harrison *(6)* found that the mathematical form of this relationship between r_2 and c_2 was well represented by the Freundlich equation of the adsorption isotherm for all of the dyes and pulps which he studied.

If the absorption coefficient per unit concentration, k'_2, is a function of the concentration of the adsorbed dye it is necessary to determine this relationship empirically. This empirical relation will then be used in equation (6), and it will be found that the above-mentioned linear relationship is no longer valid. In any case, the empirically determined relation is preferable to assuming a direct proportionately between k_2 and c'_2.

If the preceding argument for a pulp dyed with a single dye be generalized for the case of a pulp dyed with n non-interacting dyes, the *(k/s)* for this case is given in equation (7) in terms of the *(k/s)* values of the pulp dyed with the single components of the mixture.

$$(k/s)_{1,2,3\ \ldots\ ,\ n+1} = (k/s)_{1,2} + (k/s)_{1,3} + \ldots\ (k/s)_{1,\ \ldots\ n+1} - (n-1)(k/s)_1 \quad (7)$$

The values of the $(k/s)_{1,2}$, etc., are to be expressed in terms of equation (6). The R_∞ of the sheet containing n dyes is then calculated from equations (7) and (3).

The method for calculating the $(R_\infty)_{1,2,3}$ for a pulp dyed with a mixture of two dyes will now be outlined. For this example, it is assumed that the concentration of each dye component in the mixture is the same as that used for determining the spectral reflectivity of a sheet of the pulp dyed with that component alone.

Method for Calculation of $(R_\infty)_{1,2,3}$

I. Determine the spectral reflectivity curves of the following handsheets:
   a. Undyed pulp $(R_\infty)_1$
   b. Pulp plus first dye $(R_\infty)_{1,2}$
   c. Pulp plus second dye $(R_\infty)_{1,3}$
II. Calculate *(k/s)* values from (R_∞) as determined in I a, b, and c immediately above, by means of equation (2).
III. Calculate $(k/s)_{1,2,3}$ from results of step II and equation (7).
IV. Determine $(R_\infty)_{1,2,3}$ from $(k/s)_{1,2,3}$ and equation (3).

In order to determine the spectral reflectivity of the sheet containing the mixture of two dyes, it is in general sufficient in calculate the reflectivity, by the above procedure, at wave lengths separated by 10 millimicron intervals from 400 to 700 millimicrons.

Let us review the conditions under which equation (7) should hold. They are as follows:

1. No interaction between the dyes. This permits of writing the absorption coefficient of the mixture as the sum of the individual absorption coefficients.
2. $s_{1,2,3}$ is independent of the concentration of the dye mixture.
3. The percentage retention of each dye is determined for the case of the actual mixture.

It is to be emphasized that these conditions have been imposed for the sake of simplicity, and that the calculation of *(k/s)* of a mixture may be made if the absorption coefficients of the individual dye components in the mixture may be determined. If the validity of equations (3) and (7) is established for cases in which the above conditions hold, it is then possible to estimate which conditions are not met in the actual experimental cases considered.

When the assumptions upon which equation (7) is based are valid, it is possible theoretically to calculate the spectral reflectivity curves which may be obtained by dyeing a given stock with any combination of two or more dye components. There are special cases in which it is pos-

sible to reverse the process and determine the dye composition of a mixture by use of equations (3) and (7).

COMPARISON OF THE SPECTRAL ABSORPTION COEFFICIENTS OF A GIVEN DYE IN WATER SOLUTION AND ADSORBED BY THE PULP FURNISH.

In order to compare the spectral absorption coefficients of a dye in water solution with its absorption coefficient when it is adsorbed on a pulp fiber, it is necessary to measure the spectral transmittance of the water solution and the spectral reflectance of the dyed handsheet. If equation (6) be rewritten explicitly in terms of k'_2, and the logarithm of both sides of the equation be taken, equation (8) results:

$$\log(k'_2) + \log(ac_2) + \log(\rho r_2) - \log(s_1) = \log[(k/s)_{1,2} - (k/s)_1]. \quad (8)$$

The logarithm of the absorption coefficient of the dye in water solution is given in equation (9):

$$\log(u_2) + \log(cwr) = \log[\log(1/T)], \quad (9)$$

where T = transmittance of the dye solution,
u_2 = absorption coefficient per unit concentration per unit thickness of solution,
c_w = concentration of dye in grams per 1000 grams of solvent, and
r = thickness of the solution which is used for the measurement of transmittance.

If the absorption coefficients expressed in equations (8) and (9) are equivalent, the difference, log (k'_2)—log (u_2), should be independent of the wave length. If the difference varies with wave length, it is then concluded that the two absorption coefficients differ. Supplementary experiments must be performed in order to account for the observed differences between the spectral absorption coefficients.

Experimental

In order to check the theoretical relations developed in the preceding section experimentally, handsheets were made and their spectral reflectivities were determined. The first part of the experimental section will deal with the measurements made in accordance with the procedure outlined for the calculation of the spectral reflectivity $R_{\infty 1,2,3}$, that is, the spectral reflectivity of handsheets made of pulp and two dyes.

The handsheets were made from unbleached sulphite pulp and mixtures of basic dyes. The sheets were sized with a 2 per cent rosin size. Alum was added to the dye bath in order to bring it to a *pH* of 4.9. The sheets were formed on a Valley sheet mold, couched on blotters, and dried between blotters on a steam-heated drier. A preferable procedure is to air-dry the handsheets.

The spectral reflectivities of the handsheets were measured on a General Electric recording photoelectric spectrophotometer. In this model of the instrument, the sample is illuminated perpendicularly to the surface of the sheet and viewed at 45 degrees with the sample surface. Magnesium carbonate was used as the standard of reflectance with an assumed absolute reflectance of 0.98.

The concentrations of the mixtures of dyes were chosen so that the reflectivities were, in general, greater than 0.10. This choice was made in order to provide ample instrumental accuracy in the measurement of the reflectivities.

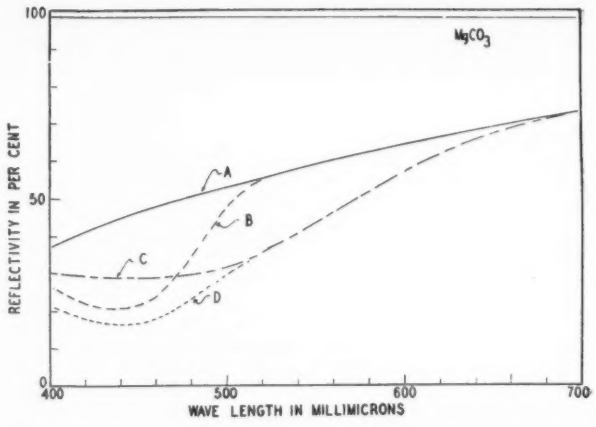

FIG. 1.
Spectral reflectivity curves of handsheets for the case of a mixture of Auramine and Basic Brown on unbleached sulphite pulp. A—Unbleached sulphite. B—Unbleached sulphite plus Auramine. C—Unbleached sulphite plus Basic Brown. D—Unbleached sulphite plus Auramine plus Basic Brown.

The spectral reflectivity curves for the handsheets used in the calculation of the Auramine-basic brown mixture are given in Fig. 1. Sample calculations for this mixture are given in Table I.

It is assumed in the development of equation (7) for a mixture of several dyes that the per cent retention of the individual dyes in the mixture be the same as for the case of the pulp dyed with the single dye. If this is not true, it is assumed that the retentions be measurable. In addition, the qualifying statement was made in the development that the dyes be non-interacting. This condition was imposed in order to warn against application of the theory to those dye mixtures for which a chemical reaction occurs, with a possible resulting change in the individual dye absorption coefficients. In all of the mixtures of the basic dyes, it was observed that the spectral reflectivity curves of the mixtures coincided with the curves of one or both of the components for some spectral range. It is seen from the curves of Fig. 1 that the mixture curve for the auramine and the basic brown coincide with that of the basic brown curve for wave lengths greater than 520 millimicrons. This fact indicates that the per cent retention of the basic brown in the mixture is the same as that for the case of the single component dyeing with basic brown. To be sure, this criterion for the constancy of retention is valid only when the spectral reflectivity curve of the dye differs from that of the natural stock in the spectral range for which the absorption coefficient of the other component is practically zero. Since the criterion was applicable to the mixtures, it was not necessary to measure the retentions as would otherwise have been required by equation (6).

The observation that the spectral reflectivity curve of one or both of the dye components differs inappreciably from that of the natural stock for some spectral range is very useful in making qualitative estimates of the nature

TABLE I
SAMPLE CALCULATIONS OF THE SPECTRAL REFLECTIVITY OF A HANDSHEET OF UNBLEACHED SULPHITE CONTAINING A MIXTURE OF AURAMINE AND BASIC BROWN DYES.

	Undyed Pulp		Pulp + Auramine. 0.75		Pulp + Basic Brown, 0.5				
Wave length in millimicrons	$(R_\infty)_1$ Observed	$(k/s)_1$ Calculated	$(R_\infty)_{1,2}$ Observed	$(k/s)_{1,2}$ Calculated	$(R_\infty)_{1,3}$ Observed	$(k/s)_{1,3}$ Calculated	$(k/s)_1 + (k/s)_{1,3} - (k/s)_1$ or $(k/s)_{1,2,3}$	$(R_\infty)_{1,2,3}$ Calculated	$(R_\infty)_{1,2,3}$ Observed
410	.390	.477	.241	1.20	.294	.84	1.56	.204	.195
420	.412	.420	.218	1.40	.292	.85	1.83	.183	.183
440	.446	.345	.208	1.51	.289	.87	2.04	.169	.164
460	.478	.283	.232	1.26	.286	.88	1.86	.181	.189
480	.500	.259	.342	.63	.296	.835	1.22	.238	.237
500	.522	.220	.470	.297	.317	.730	.81	.300	.299

of the mixture curves. The reason for this is that one immediately knows that the mixture curve will coincide with that of one of the components for this particular spectral range.

The comparison of the theoretically calculated reflectivities with those experimentally determined is given in Table II. The calculated values are given only for those wave lengths for which the (k/s) values of both dye components differ from zero. For the other regions of the spectrum, as above mentioned, the theoretical curves are identical with the experimental curves. The theoretical and experimental values agree to within 0.6 per cent on the average at an average reflectivity of 25 per cent. The calculated reflectivities are generally higher than those observed. No reasonable explanation of this observation has as yet been determined. The possibility of applying the theory to dyeings of high concentrations, as well as to mixtures of acid dyes and of direct dyes, awaits further experimental data.

Attempts have been made in the past to arrive at an expression for the reflectivity of a dyed sheet in terms of the reflectivity of the undyed sheet and the absorption coefficient of a water solution of the dye. This mode of attack demands that the absorption coefficient of the dye in solution be proportional to that of the dye when adsorbed in the sheet. As an example of the theory given above, the spectral transmittance of several concentrations if water solutions of Methylene Blue were measured, in addition to measuring the spectral reflectivities of a series of handsheets dyed with the same Methylene Blue. The handsheets ranged from ¼ to 2 pound dyeings per 1000 pounds of stock. These handsheets differed from those previously described in that they were unsized, and that they were air dried.

It was found, as has also been observed by Holmes *(7)*, that the transmittances of the Methylene Blue solutions did not follow Beer's law accurately. The absorption coefficients per unit concentration, k'_2, of the Methylene Blue adsorbed in the handsheets were calculated from equation (8). The scattering coefficient of the undyed pulp was measured and found to be independent of the wave length. It was then felt that the best comparison of the absorption coefficient of the adsorbed dye with that in water solution could be made by directly comparing the $(k/s)_2$ values with the absorption coefficient per unit thickness of solution. This was done by fitting all values at 640 millimicrons, and then comparing the average of five values of the $(k/s)_2$ of the different sheets with the average of four values of the (u_2c_{02}) of equation (9). The comparison is given in Fig. 2. It is seen that the maximum of the curve of the adsorbed dye is shifted 10 millimicrons towards the red relative to that of the water solution curve. The probable errors in the average values indicate that the differences between the two curves are real. Consequently, it may be concluded that the spectral absorption coefficient of Methylene Blue adsorbed by the pulp is markedly different from that in water solution. It is then apparent that a method which attempts to predict the spectral reflectivity of the Methylene Blue of dyed sheet by use of the spectral absorption coefficient of a water solution of the dye will be in error.

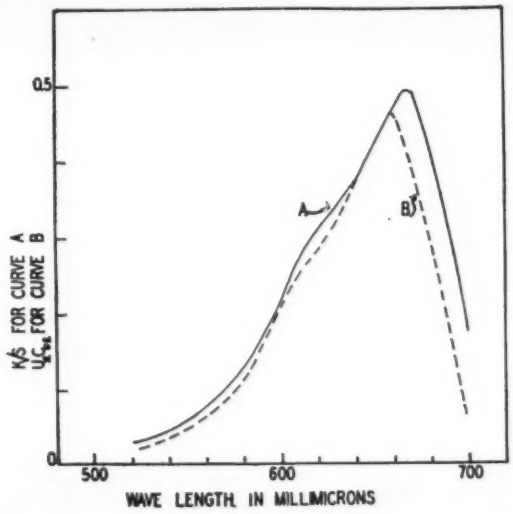

FIG. 2.
Curves showing the ratio of absorption to scattering coefficients for Methylene Blue on unbleached sulphite, and the absorption coefficient of the dye in water solution. A—$(k/s)_2$ for adsorbed dye. B—u_2c_{02} for water solution.

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(6) Harrison, Ward D., Thesis, The Institute of Paper Chemistry, 1936.
(7) Holmes, W. C., *Ind. Eng. Chem.* 16:35 (1924).

TABLE II
COMPARISON OF EXPERIMENTAL AND THEORETICAL REFLECTIVITIES FOR HANDSHEETS CONTAINING MIXTURES OF TWO BASIC DYES

Dye Mixture	Saffranine, 1.0 Methylene Blue 0.25		Auramine, 0.75 Basic Brown, 0.5		Fuchsine, 0.25 Victoria Green, 0.5		Auramine, 0.75 Victoria Green, 0.5		Auramine, 1.0 Fuchsine, 0.25		Auramine, 1.5 Methyl Violet, 0.25		Auramine, 0.75 Methylene Blue, 0.50		Chrysoidine, 0.75 Methylene Blue, 0.25	
Reflectivity	$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$		$(R_\infty)_{1,2,3}$	
Wave length in millimicrons	Observed	Calculated	Observed	Calculated	Observed	Calculated	Observed	Calculated	Observed	Calculated	Observed	Calculated	Observed	Calculated	Observed	Calculated
410	...	...	19.5	20.4	...	...	21.8	21.2	...	...	...	...	...	...	...	...
420	...	...	18.3	18.3	...	...	18.3	18.3	19.8	21.8	...	...	...	...	...	...
440	...	...	16.4	16.9	29.4	30.2	17.0	17.9	18.6	20.2	...	...	...	...	...	...
460	...	...	18.0	18.1	32.4	33.6	21.7	21.8	20.2	21.0	...	...	...	...	...	...
480	...	...	23.7	23.8	30.9	31.2	33.1	33.4	25.0	25.3	26.5	25.5	28.0	29.2	...	...
490	...	...	...	...	...	...	44.0	45.0	...	...	31.8	33.3	34.3	35.1	...	...
500	...	...	29.9	30.0	26.6	26.7	...	...	26.6	26.2	35.6	37.1	39.6	40.3	...	...
510	...	...	...	...	...	...	...	...	...	...	35.0	37.0	44.3	45.0	...	...
520	17.5	18.4	...	...	23.8	24.3	...	...	...	...	35.2	35.0	48.0	48.3	36.0	35.7
530	...	...	...	...	...	...	...	...	...	...	...	...	49.4	50.5	41.3	41.1
540	17.5	18.2	...	...	20.5	20.3	...	...	...	...	...	...	...	...	45.0	46.0
560	25.8	26.4	...	...	18.3	19.9	...	...	...	...	...	...	...	...	44.6	44.5
580	35.9	37.2	...	...	19.4	19.1	...	...	...	...	...	...	...	...	39.5	39.4
600	38.0	38.9	...	...	20.0	19.8	...	...	...	...	...	...	...	...	34.8	34.8
620	34.2	34.7	...	...	16.6	16.4	...	...	...	...	...	...	...	...	...	...
640	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
660	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
680	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
700	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Note: The experimental curves for the dye mixtures coincide with that of one of the dye components for those wave lengths in the table for which no reflectivities are quoted. The dye concentrations are expressed in pounds of dye per 1,000 pounds of stock. The concentration figures follow the name of the dye in the above table.

TAPPI Fall Meeting Notes

Registration plans for the Fall Convention of the Technical Association of the Pulp and Paper Industry October 18-21, 1937, Savannah, Ga., have been completed. The details of the registration procedure have been worked out by H. Bradley Johnson, chairman of the Registration Committee and G. F. Wegner, chairman of the Finance Committee. Messrs. Johnson and Wegner are connected with the Union Bag & Paper Corporation at Savannah.

Registration will begin Sunday morning, October 17 and continue throughout Wednesday. The hours of registration will be Sunday: 8:30 A. M. to 5:00 P. M., and 7:00 P. M. to 9:00 P. M.; Monday: 7:00 A. M. until 6:00 P. M. Tuesday and Wednesday will be from 7:30 A. M. to 9:00 A. M.

The general plans of registration are that members and guests will be given the registration card as they take up their reservations at the various hotels. The desk clerks at the Savannah hotels will at that time present those attending the Convention with registration cards and the official program and map of the city. The cards, properly executed, will then be presented at the Convention registration desk on the lobby floor of the DeSoto Hotel. The Convention registration desk is adjacent to the DeSoto desk clerk in the room usually occupied by the Automobile and Rotary Clubs. Special guests are asked to report at the registration desk for members and see Miss Blair, who will be expecting them.

The registration fees are as follows: Members $10, Non-Members $15 and Ladies $8.

Corporation members of TAPPI are entitled to one representative each at member's fee. It is desirable that the corporation members of TAPPI make this designation before time of the meeting.

On Monday morning there will naturally be a rush to register. Accordingly all members of TAPPI, guests and ladies arriving in Savannah that morning on the special trains, are asked to be sure to obtain the official registration card at their hotels and furthermore to have these cards properly filled out and ready for presentation at the TAPPI desk as soon as they reach the DeSoto Hotel.

Members desiring to remain overnight at the Cloister at Sea Island Beach, Brunswick, Ga., following the visit to the plant of the Hercules Powder Company on October 21st will be able to do so. The rates until November 1st are $7.00 per day for single occupancy of rooms and $13.00 per day double. Connecting living room with bedroom is $4.00 per day additional. A descriptive folder may be had on request to the Cloister.

The Preservation of Records in Vital Statistics

This subject is dealt with by A. E. Kimberly, Chief of Division of Repair and Preservation, National Archives, in an article prepared at the request of the Bureau of the Census and published as one of their "Vital Statistics—Special Reports."

A resume is given of related information developed through research at the National Bureau of Standards. In this work extensive information was developed on the properties of documentary materials to assist in choice of stable materials, and on the storage conditions required to maintain the original qualities. Quality of both paper and ink was studied, and information developed on protection against light, acidic atmosphere, moisture, heat and other adverse influences. Information on binding materials is also included.

It is stated that the protection of stored records from the depredations of insects is one of the most serious and difficult problems of the custodian. Fumigation is said to be the most satisfactory remedy. Information is given on fumigants known to be effective and their use in vacuum chambers is recommended.

Fire protection is discussed and satisfactory designs of rooms, vaults, stacks and containers are described.

Repair of documents requires considerable skill. Often they contain creases, folds, or tears. At the National Archives damaged documents are first moistened to make them pliable by humidification. They are then pressed and smoothed by means of suitable equipment. Records that have been water-soaked as often happens as a result of flood or fire, present additional problems. They must be dried as rapidly as possible to prevent mold, and then ironed with a warm flat-iron. Information is also given on the repair of tears and cuts by use of transparent paper tape, crepeline, Japanese tissue, or cellulose sheeting. At the National Archives, both sides of the paper are covered with cellulose acetate sheeting, applied by means of heat and pressure.

The article includes a suggested specification for writing papers prepared by the National Bureau of Standards, in which the papers are classified with respect to permanence primarily according to the cellulosic purity of the fibers.

The information contained in this article should be of great value to custodians of vital statistics and any other form of record having perpetual value. Copies can be secured from the Bureau of the Census, Department of Commerce, Washington, D. C.

Bailey Meter Co. Joins TAPPI

The Bailey Meter Company of Cleveland, Ohio has become a company member of the Technical Association of the Pulp and Paper Industry.

Bailey Meter Company was organized by E. G. Bailey in 1916 at Boston, Mass. The rapid growth and development of the field for metering and combustion control equipment, as well as the leading part which the Bailey Meter Company plays in this field, has necessitated its moving into larger quarters for the third time since 1916, the second move bringing Bailey Meter Company to Cleveland and the third move occurring at the time of consolidation between the old Bailey Meter Company and the Flow Meter Division of the General Electric Company.

The company's present location at 1050 Ivanhoe Road, Cleveland, Ohio, provides large facilities for the manufacture of steam flow—air flow Bailey boiler meters for recording steam flow, air flow and flue gas temperature, and for furnishing a guide to the operation of manual or automatic boiler control; Bailey multi-pointer gages for the measurement of draft, pressure and other factors of secondary importance in boiler operation; fluid meters for the measurement of steam—liquid—and gases in connection with boiler operation and mill distribution, and automatic control for combustion, feed water, superheat, pressure reducing, desuperheating and other factors. A complete description of these as well as other Bailey products is given in the current issue of Sweet's Engineering Catalog.

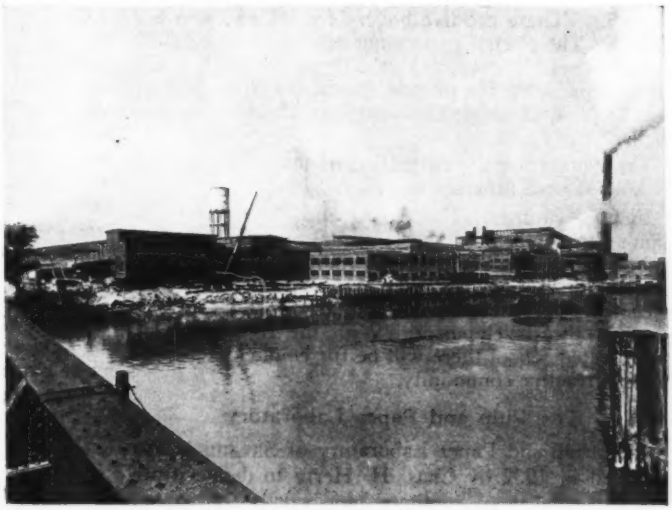
India Reduces Duty on Newsprint

WASHINGTON, D. C., September 22, 1937—The duty on newsprint paper imported into India has been reduced by the central Government to rupees ⅛ and rupees 1/12 per cwt. (112 pounds) on unglazed and other sorts of newsprint in rolls, according to a report from Trade Commissioner C. Grant Isaacs, Calcutta.

TAPPI Will Visit New Mill and Experimental Laboratory at Savannah

The convention committee for the Fall Meeting of the Technical Association of The Pulp and Paper Industry at Savannah, Ga., has made arrangements for visits on Tuesday, October 19, to the Union Bag and Paper Corporation's new mill and to the Pulp and Paper Laboratory of Savannah.

Buses will leave the Hotel DeSoto at the Bull Street entrance at 2:30 P.M. The party will be taken first to the Union Bag plant. At 4:00 P.M. the conveyances will begin to leave there for the Pulp and Paper Laboratory. Following the trip through the laboratory the party will be picked up again by buses in time to arrive at the hotels sometime after 5:00 P.M. The visits have been arranged by J. T. Gamble and E. H. Mayo of the Union Bag and Paper Corporation and by A. C. Fuller and R. Baughn of the Pulp and Paper Laboratory. In the Union Bag Mill the visitors will see one of the most modern post-depression sulphate mills; at the laboratory they will witness the demonstration of newsprint and sulphite from Southern pine.

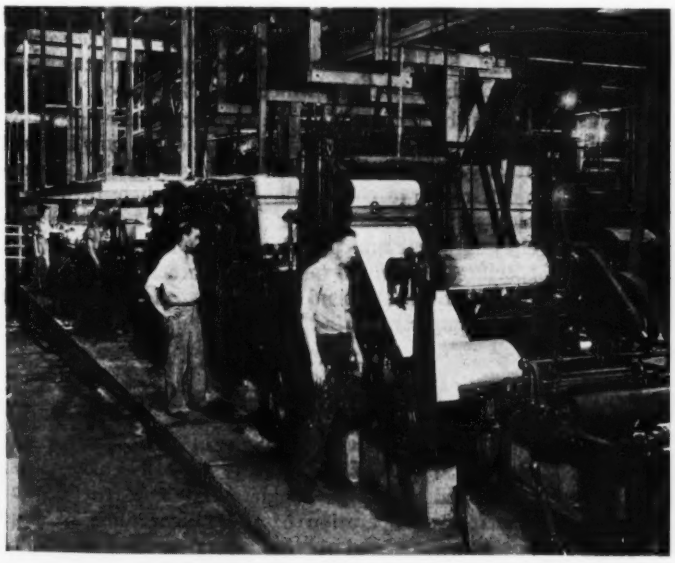


VIEW OF UNION BAG & PAPER CORP. MILL.

Savannah Mill of Union Bag

The Union Bag and Paper Corporation's Savannah mill is built on the site of the historical Hermitage plantation. The Hermitage was founded in 1782. The plantation has been famous for many years. Brick was manufactured there since 1815. In 1820 the first steel railroad in the United States was laid to transport this brick to Savannah. Just previous to the construction of the mill, the old mansion house was purchased by Henry Ford. The brick have been used to build a home at Richmond Hill on the Ogeechee River.

Ground was broken for construction of the new mill in July, 1935. The first unit was completed July 1, 1936 and was immediately followed by an expansion to second and third units. The third unit is now practically completed and will give a total productive capacity of 700 tons of pulp per day. Adjoining the mill is one of the largest bag factories in the country—capable of manufacturing 16,000,000 bags per day. The mill and bag buildings are of reinforced concrete, brick and steel construction with steel sash and poured-in-place gypsum roofs. Some 4,000 piles of concrete and wood were used for the foundations.



INTERIOR VIEW IN UNION BAG PLANT

The wood yard serves the mill through four parallel lines of conveyors, arranged so that delivery may be made by truck, rail or by river barges. Two chain-suspended barking drums, two underslung drums, three chippers, seven vibrating screens, three chip crushers and a 500 foot belt conveyor supply the digester bins with chips.

Cooking is carried out in thirteen 7.8 ton steel digesters. Washing is taken care of in 40 diffusers. For the recovery of heat and the reduction of odors the latest type condensers and accumulators have been installed. This installation effects the reduction of steam relieved during blowing and provides hot water for washing.

The seven recovery furnaces are of the Tomlinson type water tube, waste heat boilers with water-cooled black ash liquor furnaces. Recausticizing is continuous; lime sludge is re-burned in four kilns.

The three paper machines are similar: The wires are 234 inches wide and 90 feet long.

Steam is generated at 450 pounds pressure, 750 deg. F. There are five boilers for oil and two for refuse. The electric generating capacity totals 26,000 kva. Steam is extracted at 50 pounds and at 150 pounds pressure for process use in the mill. Water for the mill is obtained from four 30 inch artesian wells.

Equipment for the extraction of tallol by-products is housed in a separate building.

A fine feature of Union Bag and Paper Corporation's development at the Hermitage is the 125 acre sub-division just south of the mill. Here improved housing facilities for employees have been constructed. A baseball park and a golf course are a part of the development. With the completion of a projected school there will be for employees a complete, attractive community.

The Pulp and Paper Laboratory

The Pulp and Paper Laboratory of Savannah was founded in 1932 by Chas. H. Herty to demonstrate the applicability of southern pine woods for papers and pulps other than unbleached sulphate. The laboratory is equipped with paper making machinery for semi-commercial production of mechanical and chemical pulps. An experimental fourdrinier machine and refining engines permit the demonstration of such papers as newsprint and sulphite book. The equipment also includes a complete small scale viscose processing unit.

New developments in the southern pulp and paper field which have been demonstrated at the Laboratory are the manufacture of newsprint from pine and the manufacture of bleached rayon pulp from pine.

Delaware Valley TAPPI to Meet

The Delaware Valley Section of The Technical Association of the Pulp and Paper Industry will hold its first fall meeting at the Yorktowne Hotel, York, Pa., Friday evening, October 8, at 6:30 P. M. Following dinner N. A. Humphrey of the Johns-Manville Company will show a moving picture entitled "Heat and Its Control" and will discuss the subject. This meeting will be held jointly with the Pennsylvania-New Jersey-Delaware Division of the Superintendents Association. Provision has been made for mill visits on Friday morning, the presentation of additional papers on Saturday and a banquet Saturday evening.

Adam Wilkinson Speaks at Princeton

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., September 28, 1937—Adam Wilkinson, commissioner of labor of the paper industry in this part of the state, gave one of the lectures the past week at the Summer Conference Course in Industrial Education at the Princeton University Graduate school at Princeton, N. J. His topic was "Group Relations; Trade Union Collective Bargaining."

Specifications for Writing Papers

Attention has been called to the specifications for writing papers sent to the press by the National Bureau of Standards, as published in the last issue of the PAPER TRADE JOURNAL. These specifications in certain items have been termed inaccurate by competent authorities in the industry, and the methods given have not been approved as stated in the release by the writing paper manufacturers.

The objection to the list of specifications follow: Four grades of paper are included: (1) permanent record papers; (2) semi-permanent record papers; (3) ordinary routine papers; (4) and temporary record papers. No stock specification is given for grade 4.

The specifications advocated by the National Bureau of Standards, "Shall be 100 per cent bleached chemical fiber," is stated to be a radical departure from the usual method of specifying fibrous material used in paper making.

The term "bleached chemical fiber," is accepted in the paper industry to mean chemical wood pulp fiber, as distinguished from rag fiber.

In reference to the "stability test," competent authorities state that no final method of artificial ageing of paper has been adopted by the paper industry. Official methods have been adopted for the determination of Alpha Cellulose and copper number, which are satisfactory on paper making pulps and which are used by all paper mills for the control of the chemical purity of their half stock. The reliability of these tests on finished paper is still regarded as doubtful, because the use of sizings, coloring matter and filling materials present in finished paper, affect these tests.

The weight specifications as given by the Bureau of Standards may be criticized on the ground that some weight specifications are omitted in manifold, bond, and ledger papers. Manifolds may be had in one half pound differentials from 5½ to 11 pounds to the reams. The 28 substance is omitted in the bond paper, and the 16, 20, 24 and 44 pound weights from the ledger papers. As one authority stated, "Provided one or the other of these specifications is valid and accurately measurable, it would not seem necessary to include both a specification of the quality of the paper and of the method by which it shall be made."

It is the opinion that the specifications as given by the National Bureau of Standards could only be used by large buyers of paper, such as the U. S. Government, or large corporations having their own technical and chemical laboratories. For the average purchasing agent and paper buyer, it is stated that the specifications would be of little value. In most cases, the buyer must depend upon the word and reputation of the paper manufacturer.

Oilgear Pumps and Motors

Under the title of Oilgear Power Pumps and Motors, the Oilgear Company of Milwaukee, Wis., has issued a 56-page booklet. The construction and principle of operation of the Oilgear line of fluid power pumps and motors are described and illustrated. A copy of the bulletin will be sent on request.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

SUMMARY

Cigarette paper	794 cs.
Paper hangings	1 ble., 2 cs.
Newsprint	16,063 rolls
Printing paper	2 rolls, 6 cs.
Wrapping paper	2,967 rolls, 232 bls., 13 cs.
Drawing paper	7 cs.
Filter paper	25 cs.
Surface coated paper	15 cs.
Baryta coated paper	96 crates
Basic paper	49 cs.
Coated paper	5 cs.
Photo paper	7 cs.
Decalcomania paper	4 drums (duplex)
Tissue paper	11 pkgs., 26 cs.
Glazed paper	5 cs.
Card board	10 cs.
Miscellaneous paper	187 rolls, 330 bls., 122 cs.

CIGARETTE PAPER

R. J. Reynolds Tobacco Co., *American Farmer,* London, 140 cs.
De Mauduit Paper Corp., *American Farmer,* London, 175 cs.
De Mauduit Paper Corp., *Lafayette,* Havre, 1 cs.
Champagne Paper Corp., *Champlain,* Havre, 478 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Farmer,* London, 1 ble., 2 cs.

NEWSPRINT

N. Y. Tribune, *Markland,* Liverpool, N. S., 2295 rolls.
World Telegram, *Markland,* Liverpool, N. S., 593 rolls.
N. Y. Evening Journal, *Markland,* Liverpool, N. S., 567 rolls.
Brooklyn Daily Eagle, *Markland,* Liverpool, N. S., 361 rolls.
Parsons & Whittemore, Inc., *Markland,* Liverpool, N. S., 1412 rolls.
H. G. Craig Co., Inc., *Newscarrier,* Donnacona, 313 rolls.
Jay Madden Corp., *Scanpenn,* Kotka, 161 rolls.
Walker Goulard Plehn Co., Inc., *Scanpenn,* Kotka, 132 bls.
Dunham & Reeve, Inc., *Scanpenn,* Kotka, 243 rolls.
———, *Stavangerfjord,* Oslo, 565 rolls.
International Paper Co., *G.T.D.,* Gatineau, 308 rolls.
H. G. Craig Co., Inc., *G.T.D.,* Donnacona, 311 rolls.
International Paper Sales Co., *Pan Atlantic,* Dalhousie, 1386 rolls.
International Paper Co., *Pan Atlantic,* Dalhousie, 3896 rolls.
Perkins Goodwin & Co., *Deutschland,* Hamburg, 494 rolls.
H. G. Craig Co., Inc., *Donpaco,* Donnacona, 325 rolls.
N. Y. Evening Journal *Kolsnaren,* Norrköping, 1478 rolls.
Brooklyn Daily Eagle, *Kolsnaren,* Hallstavik, 557 rolls.
Gilman Paper Co., *Kolsnaren,* Hallstavik, 666 rolls.

PRINTING PAPER

———, *American Farmer,* London, 3 cs.
Mea Corp., *American Farmer,* London, 2 rolls.
R. J. Saunders, *Queen Mary,* Southampton, 3 cs.

WRAPPING PAPER

Lunham & Reeve, Inc., *Drottningholm,* Gothenburg, 182 bls., 881 rolls.
Lincoln Import Specialties Corp., *Drottningholm,* Gothenburg, 2086 rolls.
J. P. Heffernan Paper Co., *Pr. Harrison,* Genoa, 50 bls.
Keller Dorian Paper Co., *Pr. Harrison,* Marseilles, 13 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., *American Farmer,* London, 7 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Farmer,* London, 23 cs.
———, *American Farmer,* London, 2 cs.

SURFACE COATED PAPER

L. A. Consmiller, *Bremen,* Bremen, 15 cs.

BARYTA COATED PAPER

Globe Shipping Co., *Deutschland,* Hamburg, 96 crates.

BASIC PAPER

Globe Shipping Co., *Deutschland,* Hamburg, 49 cs.

COATED PAPER

W. J. Byrnes, *Queen Mary,* Southampton, 5 cs.

PHOTO PAPER

J. J. Gavin Co., *Queen Mary,* Southampton, 7 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Laconia,* Liverpool, 4 drums (duplex).

TISSUE PAPER

———, *Laconia,* Liverpool, 4 cs.
B. F. Drakenfeld & Co., *Laconia,* Liverpool, 1 cs.
Plant Dworkin Co., *Champlain,* Havre, 11 pkgs.
Van Oppen & Co., *Pr. Harrison,* Genoa, 21 cs.

GLAZED PAPER

Tice Import Co., *Pr. Taft,* Hong Kong, 5 cs.

CARD BOARD

J P. Heffernan Paper Co., *Black Tern,* Antwerp, 10 cs.

MISCELLANEOUS PAPER

The Borregaard Co., Inc., *Drottningholm,* Gothenburg, 177 rolls, 312 bls.
Kraemer & Co., *Drottningholm,* Gothenburg, 18 bls.
Globe Shipping Co., *Lafayette,* Havre, 8 cs.
Japan Paper Co., *Marchen Maersk,* Kobe, 81 cs.
Keuffel & Esser Co., *Deutschland,* Hamburg, 10 rolls, 33 cs.

RAGS, BAGGINGS, ETC.

Banco Coml Italiane Trust Co., *Sarcoxie,* Havre, 67 bls. bagging, 100 bls. linseys, 222 bls. dark cottons.
Harris Goldman Co., *Sarcoxie,* Havre, 51 bls. bagging.
Van Oppen & Co., *Sarcoxie,* Havre, 100 bls. bagging, 55 bls. rags.
J. T. Flannery, Inc., *Sarcoxie,* Havre, 414 bls. rags.
Castle & Overton, Inc., *Sarcoxie,* Havre, 74 bls. rags.
———, *Sarcoxie,* Havre, 57 bls. cotton waste.
Darmstadt Scott & Courtney, *Sarcoxie,* Dunkirk, 72 bls. bagging.
Castle & Overton, Inc., *Sarcoxie,* Dunkirk, 66 bls. thread waste.
Spaulding Fibre Co., *Black Tern,* Antwerp, 70 bls. rags.
American Express Co., *Black Tern,* Antwerp, 489 bls. rags.
———, *Exhibitor,* Piraeus, 412 bls. rags.
E. J. Keller Co., Inc., *Black Eagle,* ———, 258 bls. bagging.
E. Butterworth & Co., Inc., *American Importer,* Manchester, 16 pkgs. thread waste.
Hughes Fawcett, Inc., *Tuscania,* Glasgow, 38 bls. flax waste.
———, *City of Flint,* Leith, 57 bls. bagging.
Castle & Overton, Inc., *City of Flint,* Dundee, 137 bls. paper stock.
J. Cohen & Son Co., Inc., *City of Flint,* Dundee, 68 bls. paper stock.
Harris Goldman Co., *City of Flint,* Dundee, 82 bls. paper stock.
Burka Bagging Co., *Fort Townshend,* Halifax, 166 bls. bagging.
New England Waste Co., *Marchen Maersk,* Kobe, 50 bls. cotton waste.
Darmstadt Scott & Courtney, *Marchen Maersk,* 46 bls. art silk waste, 40 bls. rags.
S. Shapiro & Sons, *Marchen Maersk,* Kobe, 48 bls. cotton waste.
Atlas Waste Manfg. Co., *Marchen Maersk,* Kobe, 50 bls. rayon waste.
———, *Marchen Maersk,* Kobe, 155 bls. rags.
E. J. Keller Co., Inc., *Marchen Maersk,* ———, 16 bls. hemp waste, 26 bls. linen waste.
E. J. Keller Co., Inc., *Konigstein,* ———, 260 bls. bagging.
G. A. Henshaw & Son, *Konigstein,* Antwerp, 173 bls. flax waste.
Chase National Bank, *Konigstein,* Antwerp, 119 bls. jute waste.
Castle & Overton, Inc., *Culberson,* Buenos Ayres, 86 bls. hemp canvas; 42 bls. new cuttings; 28 bls. old garments.
———, *City of Canton,* Colombo, 85 bls. rags.

GLUE STOCK, ETC.

H. J. Baker & Bro., *Nienburg,* Buenos Ayres, 22 bls. glue stock.
American Express Co., *American Importer,* Liverpool, 706 bls. hide cuttings.

OLD ROPE

Chase National Bank, *American Farmer,* London, 70 coils.
G. W. Millar & Co.. Inc., *Black Eagle,* Rotterdam, 40 coils.
E. J. Keller Co., Inc., *Maria,* ———, 58 coils.
Chase National Bank, *Marchen Maersk,* Kobe, 80 bls. (rope waste).

WOOD PULP

Bulkley Dunton Pulp Co., Inc., *Drottningholm,* ———, 600 bls. sulphite.
Price & Pierce, Ltd., *Drottningholm,* Gothenburg, 325 bls. unbleached sulphite.
Perkins Goodwin & Co., *Drottningholm,* Gothenburg, 150 bls. sulphite; 140 bls. sulphate; 800 bls. dry pulp.
E. M. Sergeant Pulp & Chemical Co., *Stavangerfjord,* Nygard, 300 bls. chemical pulp.
The Borregaard Co., Inc., *Stavangerfjord,* Oslo, 1776 bls. sulphate.
Irving Trust Co., *Stavangerfjord,* Oslo, 654 bls. mechanical pulp.
Irving Trust Co., *Stavangerfjord,* Oslo, 425 bls. chemical pulp.
Stora Kopparberg Corp., *Gonzenheim,* Gefle, 1060 bls. dry pulp.
———, *Gonzenheim,* Gefle, 125 bls. sulphite.
Pagel Horton & Co., Inc., *Gonzenheim,* Gefle, 625 bls. sulphite, 1666 bls. sulphate.
Perkins Goodwin & Co., *Gonzenheim,* Sundsvall, 150 bls. sulphite, 600 bls. sulphate.
Gottesman & Co., Inc., *Gonzenheim,* Sundsvall, 3600 bls. sulphite.
Johaneson Wales & Sparre, Inc., *Gonzenheim,* Hornefors, 1645 bls. sulphate, 235 tons.
———, *Gonzeheim,* Iggesund, 3250 bls. sulphite; 1000 bls. sulphate.
Pagel Horton & Co., Inc., *Gonzenheim,* Sikea, 300 bls. sulphite.
M. Sone, *Maria,* Trieste, 424 bls. wood pulp.
———, *Maria,* Sibenik, 4800 bls. sulphite.
M. Sone, *Kolsnaren,* Stockholm, 780 bls. sulphite.
Bulkley Dunton Pulp Co., Inc., *Kolsnaren,* ———, 2200 bls. sulphite, 2050 bls. sulphate.

WOOD PULP BOARDS

Jay Madden Corp., *Scanpenn,* Wiborg, 8 bls.
Jay Madden Corp., *Scanpenn,* Kotka, 318 rolls, 98 tons.

ALBANY IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Price & Pierce, Ltd., Lagaholm, Sandviken, 150 bls. unbleached sulphate.
Perkins Goodwin & Co., *Lagaholm,* Sandviken, 1200 bls. sulphate.
Perkins Goodwin & Co., *Lagaholm,* Waija, 2778 bls. kraft pulp.
Price & Pierce, Ltd., *Lagaholm,* Bollsta, 600 bls. unbleached mechanical pulp.
Price & Pierce, Ltd., *Lagaholm,* Stockholm, 2100 bls. bleached sulphite.
International Paper Co., *Tercero,* Chatham, N. B., 2900 cords pulpwood.
Gottesman & Co., Inc., *Lagaholm,* Gothenburg, 3350 bls. sulphite.
Gottesman & Co., Inc., *Gonzenheim,* Iggesund, 1250 bls. sulphate.
———, *Gonzenheim,* Iggesund, 3325 bls. sulphite.
Price & Pierce, Ltd., *Gonzenheim,* Orviken, 2700 bls. chemical pulp, 450 tons.
Pagel Horton & Co., Inc., *Gonzenheim,* Sikea, 2550 bls. sulphite.
Pagel Horton & Co., Inc., *Gonzenheim,* Hornefors, 3600 bls. sulphite, 600 tons.
Pagel Horton & Co., Inc., *Gonzenheim,* Gefle, 11875 bls. sulphate.
———, *Gonzenheim,* Gefle, 375 bls. sulphate.
Tradesmans Natl Bank Trust Co., *Gonzenheim,* Norrsundet, 3000 bls. sulphate.
Perkins Goodwin & Co., *Gonzenheim,* Sundsvall, 1050 bls. sulphite.
Gottesman & Co., Inc., *Gonzenheim,* Sundsvall, 2250 bls. sulphite.

PORTLAND IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Gottesman & Co., Inc., *Thalatta,* Sweden, 500 bls. sulphite, 1750 bls. sulphate.
Pagel Horton & Co., Inc., *Thalatta,* Sweden, 6452 bls. sulphite.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Irving Trust Co., *Sarcoxie,* Havre, 67 coils old rope.
Irving Trust Co., *Sarcoxie,* Dunkirk, 74 bls. bagging.
———, *Sarcoxie,* Dunkirk, 59 bls. rags.
Textile Waste Supply Co., *Marchen Maersk,* Kobe, 50 bls. rags.
———, *Marchen Maersk,* Kobe, 50 bls. rayon waste.
Gottesman & Co., Inc., *Thode Fagelund,* Norway, 3000 bls. sulphite.
M. Sone, *Ida,* Trieste, 637 bls. wood pulp.
Price & Pierce, Ltd., *Thode Fagelund,* ———, 600 bls. unbleached sulphite; 500 bls. bleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Lagerloef Trading Co., *Scanpenn,* Wiborg, 6367 bls. sulphite, 1251 tons; 500 bls. sulphate, 100 tons.
Jay Madden Corp., *Scanpenn,* Kotka, 516 rolls wood pulp boards, 102 tons.
J. W. Hampton, Jr., & Co., *Scanpenn,* Kotka, 828 rolls newsprint.
Perkins Goodwin & Co., *Lagaholm,* Sandviken, 1200 bls. sulphite.
Perkins Goodwin & Co., *Lagaholm,* Wifstavarf, 600 bls. sulphite; 1500 bls. sulphate.
Gottesman & Co., Inc., *Lagaholm,* Wifstavarf, 750 bls. sulphite; 1350 bls. sulphate.
Price & Pierce, Ltd., *Lagaholm,* Bollsta, 1050 bls. mechanical pulp.
J. Andersen & Co., *Lagaholm,* Waija, 600 bls. sulphite.
Treetex Corp., *Lagaholm,* Gothenburg, 2275 bls. wall board.
H. Fuchs & Son, *Lagaholm,* Gothenburg, 3 crates pulp boards.
Castle & Overton, Inc., *Black Eagle,* Rotterdam, 216 bls. rags.
E. J. Keller Co., Inc., *Black Eagle,* ———, 41 bls. rags.
F. Weber & Co., *Black Eagle,* Antwerp, 10 cs. drawing paper.
Castle & Overton, Inc., *Black Eagle,* Antwerp, 72 bls. rags.
———, *Black Eagle,* Antwerp, 57 bls. thread waste.
———, *City of Flint,* Hamburg, 334 bls. wood pulp, 50 tons.
Brown Bros. Harriman & Co., *City of Flint,* Hamburg, 97 bls. rags.
———, *City of Flint,* Hamburg, 110 bls. rags, 126 rolls wrapping paper.
J. Wallworth & Sons, Inc., *City of Flint,* Dundee, 26 bls. paper stock.
Philadelphia Inquirer, *Kolsnaren,* Hallstavik, 502 rolls newsprint.
Price & Pierce, Ltd., *Kolsnaren,* Stugsund, 1020 bls. sulphite.
E. J. Keller Co., Inc., *Schodack,* ———, 50 bls. paper stock.

CAMDEN IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Lagerloef Trading Co., *Scanpenn,* Wiborg, 5692 bls. sulphate, 1118 tons.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Castle & Overton, Inc., *Black Tern,* Rotterdam, 295 bls. wood pulp, 59 tons.
Congoleum-Nairn Co., *Black Tern,* Antwerp, 229 bls. rags.
Perkins Goodwin & Co., *Lagaholm,* Wifstavarf, 1500 bls. sulphate.
E. M. Sergeant Pulp & Chemical Co., *Lagaholm,* Sandviken,, 600 bls. sulphate.
Price & Pierce, Ltd., *Lagaholm,* Bollsta, 3000 bls. mechanical pulp.
Gottesman & Co., Inc., *Lagaholm,* Waija, 2100 bls. kraft pulp.
———, *Maria,* Trieste, 4455 bls. wood pulp.

NEW ORLEANS IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

Continental Bank Trust Co., *Maria,* Trieste, 222 bls. rags.
M. Sone, *Braheholm,* Bollsta, 3000 bls. wood pulp.
Parsons & Whittemore, Inc., *Wasgenwald.* ———, 292 bls. wood pulp.

MONTREAL IMPORTS

WEEK ENDING SEPTEMBER 28, 1937

M. Sone, *Beaverbrae,* Sundsvall, 5500 bls. wood pulp.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 29, 1937.

The wholesale paper market report moderate activity for the current week. In general, volume of sales is stated to below expectations. The demand for tissues is characterized in the market as slow, though more inquiries have been received during the current week than for some weeks past. Prices continue firm.

The newsprint market is active, with the normal volume of contract shipments moving freely. Bond and ledger papers continue to reflect a lagging consumer demand. Prices continue firm.

Kraft papers are in active demand. Prices are firm and the trend in both prices and demand is stated to be upward. Fall expectations in the trade is for a satisfactory volume in the future.

The box board market remains relatively quiet under a continuation of a less than seasonable demand. Prices remain firm, with expectations that an increased demand will shortly set in.

Chemical Pulp

The demand for chemical pulp continues moderately active, with the imported grades of pulp rather limited. In general, the market shows a slight recession in volume for the current week. Prices continue firm and unchanged from the quotations of last week.

Mechanical Pulp

The mechanical pulp market reports demand on the level of the preceding week, with quotations unchanged.

Old Rope and Bagging

The demand for old rope and bagging continues moderate. Prices are firm and remain unchanged from the quotations of last week.

Rags

The domestic rag market reports demand as moderate. Prices are firm and unchanged, with slightly lower prices quoted on old roofing rags. The foreign demand for a number of grades is active.

Waste Paper

The waste paper market continues steady. Contrary to the expectations in the trade the higher grades continue very firm, while the demand for lower grades is rather slow. Prices of many grades are slightly lower for the current week.

Twines

The twine market is moderately active. Prices continue firm, with cotton twines in a relative weak position, due to the large cotton crop.

Warns Against Too Rapid Promotion

Warning against too rapid development in the paper and pulp industry in the South has been expressed by E. L. Demmon, director of the Southern forest experiment station at New Orleans.

Ability of the forests to support additional plants and the desirability of producing pulpwood at the expense of other forest products are worthy of consideration, he said. Not every additional plant, he added, should be viewed as bringing new capital, creating new opportunities for the sale of forest products and the employment of labor.

Resources such as forests and game, which are replaceable, as distinguished from oil, gas, coal and sulphur, which are irreplaceable except through the lapse of geological ages, should be husbanded, he said.

Permanent forest industries which build up a stable community, he said, should result from the handling of natural resources, rather than temporary industries, which "operate only a few years, deplete your forests and then move to virgin territory, leaving behind as a public liability a stranded and destitute population with insufficient opportunity for employment and no hopeful outlook for the future."

New Educational Magazine

The Institute of Industrial Arts, Gardenvale, Quebec, which, as one of its activities, has been conducting the correspondence courses sponsored by the pulp and paper industry of Canada and the United States, has undertaken the publication of a monthly magazine *The Instructor*.

This Magazine will pay especial attention to the development of industrial adult education, and the Credit Union movement in industry.

It will aim to help those whose ambition leads them to help themselves, acting as a medium for the exchange of ideas, and providing pertinent articles on science, industry, and social development.

Publication and editorial work will be carried on at 263 Adelaide Street, W., Toronto, and the Editor will be T. Linsey Crossley, paper technologist, who has been Director of Field work for the Institute of Industrial Arts, and is well known throughout the pulp and paper industry.

Installs Combustion Control at Piedmont

PITTSBURGH, Pa., September 27, 1937—T. A. Peebles, vice president, Hagan Corporation, Pittsburgh, announces receipt of an order from the West Virginia Pulp and Paper Company for a complete automatic combustion control system for a new 375,000 lb. per hour pulverized coal fired boiler to operate at 600 lbs. pressure. The new power plant will be installed at the Piedmont, W. Va., works of this company, it is said.

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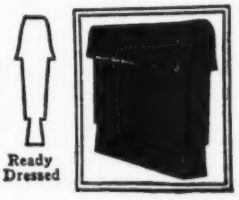

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CASEIN

Uniform Quality
Dependable Service
Special Types to Meet
Unusual Requirements

CASEIN COMPANY OF AMERICA, INC.
350 Madison Avenue, New York, N. Y.
Oldest and Largest Producers of Casein in America

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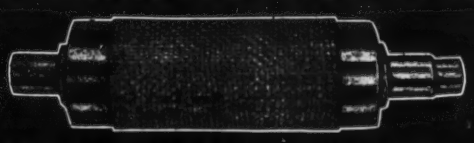

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324 ST. PAUL ST.
ROCHESTER, N. Y.

Pulp and Paper Mill Screens
Of Stainless Steel—Copper—Bronze—Monel—Chemical Resisting Alloys
Perforations that are accurate in size
Any Metal Any Perforation

The Harrington & King PERFORATING CO.
5652 Fillmore St., Chicago, Ill. 114 Liberty St., New York, N.Y.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, September 29, 1937.

BLANC FIXE—The blanc fixe market continues seasonably active. Prices are firm and conform to the levels of last week. The pulp is quoted at from $42.50 to $45 per ton, in bulk. The powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—The demand for bleaching powder continues good. Prices are firm and unchanged for the current week. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market continues steady. Prices are firm and unchanged. Domestic standard ground casein is quoted at 13½ cents per pound, while domestic finely ground casein is offered at from 13½ to 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA—The demand for caustic soda continues good. Prices are firm and unchanged from the levels of last week. Prices for solid caustic soda range from $2.10 to $2.30; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The china clay market is active. Contract shipments are moving in good volume. The imported clay is quoted at from $14.50 to $25 per ton, ship side. The demand for domestic clay continues strong. Quotations of domestic filler clay range at from $6.50 to $12 per ton, while coating clay is quoted at from $11 to $22 per ton, all prices at mines.

CHLORINE — The demand for chlorine continues steady. Prices are firm. Chlorine is currently quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market continues firm. No change in prices are reported. Paper making rosin is offered at $7.87½; wood rosin at $7.90 per 280 pounds, gross weight, in barrels at Savannah. Seventy per cent rosin size is quoted at $3.61 per 100 pounds, in tank cars, f.o.b., shipping point.

SALT CAKE—The demand for salt cake continues normal. Prices are firm. Quotations range at from $12 to $13; chrome salt cake at from $10 to $11, f.o.b., shipping point. Imported salt cake is offered at $12, Gulf or Atlantic Seaboard, on dock.

SODA ASH—The soda ash market is normal with a seasonable demand from paper mills. Prices are unchanged. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for starch is on the level of the preceding week. Prices are unchanged. Paper making starch is quoted at $3.45 per 100 pounds, in barrels, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—The sulphate of alumina market continues normal, with contract shipments moving freely. Prices are firm. The commercial grades are quoted at from $1.25 to $1.60; iron free at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR—The demand for sulphur continues good. Prices are firm. Annual contracts are quoted at $18 per long ton, f.o.b., cars at mines. Quotations on spot and nearby car lots, are at $21 per ton; all prices in car lots.

TALC—The talc market is active and prices are firm. Domestic talc is offered at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

Tissues—Per Ream—

White No. 1	1.10	@	—
White No. 1 M. G.	1.07½	@	—
White No. 1½	.77½	@	—
White No. 2	.75	@	—
Anti-Tarnish M. G.	.77½	@	—
Colored	.90	@	—
Kraft	.77½	@	—
Manila	.75	@	—
Unbleached Toilet	2.90	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—

Roll, contract	42.50	@	—
Sheets	47.50	@	—

Kraft—

No. 1 Northern	5.25	@	5.75
Standard	5.00	@	—
Southern	4.50	@	—
Machine glazed, plain, striped	5.00	@	—

Boards, per ton—

Chip	42.50	@	—
News	45.00	@	—
Sgl. Mla. Ll. Chip	55.00	@	—
Jute Lined Chip	55.00	@	—
White Pat. Coated	67 50	@	—
Kraft Liners	55.00	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag	.....	32.20@ 37.75
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
25% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$10.55@$12.75
No. 2	8.50@ 10.25	9.65@ 11.75
No. 4	7.60@ 9.25	8.80@ 10.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.45	@	$14.25
No. 2 Glossy Coated	10.80	@	12.25
No. 3 Glossy Coated	9.65	@	11.00
No. 4 Glossy Coated	9.05	@	10.50
No. 1 Antique (watermarked)	9.05	@	10.50
No. 2 Offset	8.35	@	9.50
A Grade E. F.	8.20	@	9.50
A Grade S. & S. C.	8.45	@	9.75
B Grade E. F.	7.60	@	8.75
B Grade S. & S. C.	7.85	@	9.00
C Grade E. F.	7.30	@	8.50
C Grade S. & S. C.	7.55	@	8.75
D Grade E. F.	7.00	@	8.25
D Grade S. & S. C.	7.25	@	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—

Moist	35.00	@	36.00
Dry	40.00	@	42.00

(Delivered)

No. 1 Domestic and Canadian	36.00	@	37.50

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—

Prime Bleached Sulphite	3.50	@	4.65
Prime Qualities—Easy-Bleaching Sulphite	3.50	@	4.00
Strong Unbleached Sulphite	3.00	@	3.65

(On Dock, Atlantic Ports)

Kraft Bleached	4.00	@	4.75
Kraft Light & Strong	3.00	@	3.75
Kraft No. 1	2.90	@	3.65
Kraft No. 2	2.50	@	2.75

(F.o.b. Pulp Mill)

Kraft Domestic	2.00	@	3.10

(Delivered)

Soda Bleached	3.25	@	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—New White, No. 1	9.00	@	9.25
Silesias, No. 1	6.75	@	7.00
New Unbleached	9.25	@	9.50
Blue Overall	7.25	@	7.50
Fancy	3.75	@	4.25
Washables	2.75	@	3.25
Mixed Khaki Cuttings	4.25	@	4.50
O. D. Khaki Cuttings	4.75	@	5.00

Old Rags

White, No. 1—Repacked	3.75	@	4.25
Miscellaneous	3.00	@	3.25
White, No. 2—Repacked	2.60	@	2.85
Miscellaneous	2.00	@	2.25
Thirds and Blues—Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00
Roofing Rags—No. 1	1.30	@	1.40
No. 2	1.40	@	1.50
No. 3 (bagging)	.85	@	.95
No. 4	.90	@	1.00
No. 5A	.65	@	.75

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

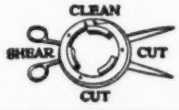
Old Rags

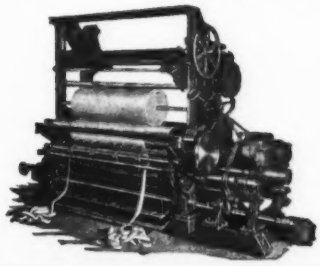
No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	5.50

LANGSTON

Slitters and Roll Winders

help reduce upkeep and labor costs in many plants.





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are good wires

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ALL KINDS OF INDUSTRIAL CONSTRUCTION

"COOPER 22"

The Original Chrome Nickel Alloy for the Paper Mill

HEAT - ABRASION - CORROSION RESISTING

Special Castings, Fittings, Valves, Pipe, etc.

THE COOPER ALLOY FOUNDRY CO.

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CHEMISTS AND ENGINEERS TO THE PULP AND PAPER INDUSTRY FOR OVER FIFTY YEARS

Laboratories and Experimental Mill

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CORROSION RESISTING LININGS

STEBBINS

ENGINEERING & MANUFACTURING CO.

SEATTLE WATERTOWN, N.Y. MONTREAL

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Stickle Automatic Steam Controls
Drainage systems for Dryers and heating systems
Condensation economizers for heating air
Deaerating feed water heaters, reducing valves, steam traps, oil and steam separators.

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MORRIS

CENTRIFUGAL PUMPS

Write for interesting and useful bulletin on Non-Clogging Pumps for handling pulp, and centrifugal pumps for other mill processes and services.

MORRIS MACHINE WORKS, Baldwinsville, N. Y.

No. 4 White Linens	2.25	@	3.25
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	3.00
No. 4 White Cotton	1.90	@	2.20
Extra Light Prints	2.00	@	2.40
Ord. Light Prints	1.75	@	2.15
Med. Light Prints	1.55	@	1.95
Dutch Blue Cottons	2.25	@	2.50
French Blue Linens	3.00	@	—
Checks and Blues	2.00	@	—
Linsey Garments	2.25	@	2.35
Dark Cottons	2.00	@	—
Old Shopperies	1.75	@	—
New Shopperies	1.75	@	—
French Blues	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.35	@	2.50
Domestic	2.25	@	2.35
Wool Tares, light	1.75	@	1.85
Wool Tares, heavy	2.35	@	2.45
Bright Bagging	1.70	@	1.75
Manila Rope—			
Foreign	4.75	@	5.00
Domestic	5.00	@	5.25
Jute Strings	2.75	@	3.00
Sisal Strings	2.60	@	2.75
Mixed Strings	Nominal		

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1	2.60	@	2.70
Hard White No. 2	2.40	@	2.50
Soft White No. 1	2.30	@	2.40
Flat Stock—			
Stitchless	1.40	@	1.50
Overissue Mag	1.40	@	1.50
Solid Flat Book	1.05	@	1.15
Crumbled No. 1	.75	@	.85
Ledger Stock	1.55	@	1.60
New B. B. Chips	.45	@	.50
Manila—			
New Env. Cut	2.15	@	2.25
New Cuttings	1.65	@	1.75
Old Kraft Machine—			
Compressed bales	1.40	@	1.55
News—			
No. 1 White News	1.40	@	1.50
Strictly Overissue	.60	@	.70
Strictly Folded	.42½	@	.47½
No. 1 Mixed Paper	.35	@	.40

Twines

(F. o. b. Mill)

(Soft Fibre)			
Coarse Polished—			
India	.16	@	.17½
White Hemp	.17	@	.20½
India Compress	.16½	@	.17
Fine Polished—			
Fine India	.22	@	.28
Unpolished—			
Box	.12½	@	.15½
Paper Makers	.11½	@	.13¾
Tube Rope	.12½	@	.15¼
Wall Paper	.13½	@	.14¼
Wrapping	.17	@	.21
Soft Fiber Rope	.14¾	@	.15¾
(Hard Fibre)			
Medium Java	.13½	@	.14
Mex. Sisal	.12	@	.12½
Manila	.22	@	.29½
Domestic	—	@	3.75
Transmission Rope	2.00	@	2.25
Soft Jute Ropes	2.25	@	2.50
Jute Carpet Threads	1.75	@	2.00
Gunny No. 1			
Foreign	2.50	@	2.55
Domestic	2.10	@	2.15
Bleachery Burlap	4.00	@	4.25
Scrap Burlap—			
Foreign	2.25	@	2.40
Domestic	1.75	@	1.85
Scrap Sisal	2.25	@	2.30
Scrap Sisal for Shredding	2.40	@	2.50
Wool Tares, heavy	—	@	2.25
New Burlap Cuttings	2.45	@	3.00
Aust. wool pouches	3.50	@	3.60
Heavy bailing bagging	2.50	@	2.70
Paper Mill Bagging	1.70	@	1.75
Bagging No. 2	1.00	@	1.10

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.03½	@	.03¾
New White No. 1	.08	@	.08¼
New White No. 2	.06	@	.06¼
New Light Flannelettes	—	@	.06½
Silesias No.	—	@	.06½
New Black Silesias	.04¼	@	.04½
Soft Unbleached	.09	@	.09¼
Blue Cheviot	.07¼	@	.07½
Fancy	.03¾	@	.04
Washable	.03	@	.03¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	—	@	1.40
No. 2	—	@	1.30
No. 3	1.20	@	—
Cottons—According to grades—			
Blue Overalls	.07	@	.07½
New Black, soft	.04¼	@	.04½
Khaki Cuttings	.04½	@	.04¾
O. D. Khaki	.04¼	@	.05
Corduroy	.03¼	@	.03½
New Canvas	.07¼	@	.08¼
B.V.D. Cuttings	.08¼	@	.09

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	—	@	1.40
No. 2	—	@	1.30
No. 3	1.20	@	—

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.65	@	1.75
Dutch Blues	2.90	@	3.05
New Checks and Blues	2.85	@	3.00
Olds Fustians	2.85	@	3.00
Old Linsey Garments	2.15	@	2.50
New Silesias	6.50	@	7.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	—	@	.08
New White, No. 2	.04½	@	.05
Light Silesias	.05½	@	—
Silesias, No. 1	—	@	.05½
Black Silesias, soft	.03	@	.03½
New Unbleached	.08	@	.08½
Washable, No. 1	.02¼	@	.02½
Blue Overall	.05½	@	.06
Cottons—According to grades—			
Washable, No. 2	—	@	.02
New Blue	.01¾	@	.02
Fancy Percales	—	@	.03½
New Black Soft	.03	@	.03½
New Light Seconds	—	@	.05½
New Dark Seconds	1.25	@	1.50
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	—	@	.03
Corduroy	.02¾	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.02	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.25	@	2.50
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	1.75	@	2.00
Domestic No. 1	1.50	@	1.70
Domestic No. 2	1.30	@	1.40
Roofing Bagging	—	@	1.25

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.80	@	2.00
Domestic	2.00	@	2.25
Manila Rope	4.25	@	4.50
Sisal Rope	2.00	@	2.25
Mixed Rope	1.00	@	1.10
Scrap—			
No. 1	1.75	@	2.00
No. 2	1.00	@	1.25
Wool Tares, heavy	3.25	@	3.50
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.55	@	2.75
No. 2 Hard White	2.40	@	2.55
No. 1 Soft White	2.40	@	2.55
No. 2 Soft White	1.50	@	1.75
No. 1 Mixed	.80	@	.90
Solid Ledger Stock	1.75	@	1.85
Ledger Stock, white	1.60	@	1.70
Ledger Stock, colored	1.35	@	1.45
No. 1 Books, heavy	1.05	@	1.10
Manila Cuttings	1.75	@	1.85
Print Manila	.50	@	.55
Container Manila	.45	@	.50
Kraft Paper	1.30	@	1.40
No. 1 Mixed Paper	.35	@	.45
Straw Board Chip	.40	@	.45
Binders Board Chip	.40	@	.45
Corrugated Board	.50	@	.55
Overissue News	.60	@	.65
Olds Newspapers	.40	@	.45

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.40
No. 1 Soft White	1.85	@	2.15
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ldgers	.85	@	.90
No. 1 Books, heavy	1.00	@	1.10
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.60	@	1.70
Manila Env. Cuttings, extra quality	2.20	@	2.30
No. 1 Old Manila	.95	@	1.00
White Blank News	1.30	@	1.40
No. 1 Kraft	1.60	@	1.65
Mixed Papers	.30	@	.32½
Print Manila	.60	@	.65
Container Manilas	.27½	@	—
Old Newspapers	.37½	@	.40
Overissue News	.45	@	.50
Box Board Chips	.35	@	.40
Corrugated Boxes	.42½	@	.47½
Kraft corrugated boxes	1.20	@	1.22½
Screening Wrappers	.60	@	.65

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	—	@	3.75

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	3.30	@	3.40
No. 1 Hard White	2.60	@	2.70
No. 1 Soft White	2.10	@	2.15
Ledger & Writings	1.40	@	1.50
Solid Books	1.25	@	1.30
Blanks	1.50	@	1.65
Krafts	1.00	@	1.25
New Kraft Cuts	1.80	@	2.00
Manila Env. Cuts	2.20	@	2.35
Ex. No. 1 Manila	2.20	@	2.35
Print Manila	1.70	@	1.80
Overissue News	.80	@	.90
Old Newspapers—			
No. 1 Folded News	.80	@	.90
No. 1 Mixed Paper	.80	@	.90
Roofing Stocks—			
No. 1	2.00	@	2.25
No. 2	1.85	@	2.00

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	.36½
No. 1 Tints	.36½	@	.37½
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	—	@	.1550
No. 4 Tints	.16	@	.1650
No. 5 Bond—White	.11.35	@	—
No. 5 Bond—Tints	.12.35	@	—
No. 5 Bond—Golden Rod	13.35	@	—
No. 5 Ledger—White	.1185	@	—
No. 5 Ledger—Tints	.1285	@	—
No. 6 Bond—White	10.75	@	—
No. 6 Bond—Tints	11.25	@	—
No. 6 Bond—Golden Rod	12.75	@	—
No. 7 Bond—White	9.10	@	—
No. 7 Bond—Tints	9.60	@	—
No. 7 Bond—Golden Rod	11.10	@	—
Book—			
No. 1 M. F.	7.10	@	7.35
No. 2 M. F.	6.85	@	7.20
No. 3 M. F.	5.60	@	6.20
No. 1 S. C.	7.60	@	7.85
No. 2 S. C.	7.10	@	7.35
No. 3 S. C.	6.10	@	6.35
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.00	@	—
No. 3 Coated and Litho	9.50	@	10.00
Coated tinted	13.00	@	13.50
Wrapping—delivered—			
Rag Brown	4.85	@	5.55
White Wrap	4.00	@	—
"B" Manila	4.90	@	6.25
No. 1 Manila	5.50	@	7.00
Fiber	5.50	@	—
Kraft, No. 2	5.50	@	—

(F. o. b. Cars, Toronto)

News, per ton—			
Rolls (contract)	38.50	@	—
Sheets	45.50	@	—

Pulp

Ground wood	32.00	@	—
Unbleached Sulphite	59.00	@	—
Book (Class 1)	71.00	@	—
Writing (Class 2)	72.00	@	—
Select (Class 3)	73.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.50	@	—
Soft White	2.15	@	—
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.00	@	—
Light and Crumpled Book Stock	.85	@	—
Ledgers and Writings	1.20	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.65	@	—
Kraft	1.00	@	1.70
News and Scrap—			
Strictly Overissue	.65	@	—
Strictly Folded	.60	@	—
No. 1 Mixed Paper	.50	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09	@	.09¼
Fancy Shirt Cuttings	.03½	@	.03¾